

# CASTANEA

The Journal  
of the  
Southern Appalachian Botanical Club

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All persons interested in the botany of the Southern Appalachian Mountains are invited to join the club. Dues, including subscription to the Journal, are \$3.00 per year. Single copies of *Castanea*, seventy-five cents.

Notes and short scientific papers relating to the botany of the region are welcomed and will be published to the extent that the size of the Journal allows.

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# CASTANEA

## The Journal of the Southern Appalachian Botanical Club

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No. 1

### A Preliminary Checklist of Plants of the Central Virginia Blue Ridge

RUSKIN S. FREER

#### Introduction

This paper is the first attempt to bring together the results of collecting which was started in the summer of 1927. The term "preliminary" may seem inappropriate, considering the lapse of years since the project was initiated, but is entirely accurate in the light of what remains to be done. Much of the field work has been carried on incidentally, as in connection with trips of the local Appalachian Trail Club, or with classes. Many of the collections were made on occasional trips. More intensive work was done during the summers of 1927, 1930, 1933 and through the first seven months of 1947, when a one-semester sabbatical leave was utilized. Previous to 1947 the full teaching schedule of a small college, with no system of sabbatical leaves, made it difficult to carry on much sustained field work.

The area in which this work has been done includes parts of Bedford, Botetourt, Rockbridge, Amherst, Nelson and Augusta Counties. It lies almost entirely in the James River watershed, and the James cuts this portion of the Blue Ridge almost in half, the northern part being a little larger than the southern. The area lies between the cities of Waynesboro and Roanoke.

It formerly comprised the Natural Bridge National Forest, which was dismembered in the '30's, that part south of the James being incorporated into the Jefferson National Forest, and the northern portion being included in the George Washington National Forest. In recent years it has been traversed by the Blue Ridge Parkway, which connects the Skyline Drive of the Shenandoah National Park

with the Great Smoky Mountains National Park of North Carolina and Tennessee. This Parkway, while opposed at first by Trail Club members and naturalists of this part of the country, as an intrusion into a splendid wilderness area, has made it more accessible. The division of the Parkway into projects, designated by letters, and stations, marked by black numerals on white stakes every 200 feet, provides a ready means of locating collections made on or adjacent to the Parkway.

The Blue Ridge Parkway is administered by the National Parks Service. The boundaries extend approximately 100 feet from either side of the road. Within this area, permits are necessary for collecting of any sort. These are obtainable from the superintendent's office in Roanoke for this area.

From the standpoint of physical geography, geology and scenic attractions, this section of the Blue Ridge is of much interest. The highest peak is Apple Orchard Mountain, on the line between Bedford and Botetourt Counties, with an elevation of 4224 feet. The Peaks of Otter in Bedford County have attracted visitors for many years, and have been visited by botanists for over a hundred years, according to the late Dr. John K. Small. There are eleven peaks in the area with an elevation of over 4000 feet. The whole area has a very rugged topography, the valleys in many places having been cut out of the soft Harper's (Hampton) shale, lower Cambrian in age, surrounded by steep mountains, most of which are remnants of an extensive batholith of Pre-Cambrian, crystalline rock, left by erosion of the overlying rocks. This crystalline rock is called hypersthene granodiorite by geologists. The conspicuous peaks, mostly on the east side of the central Virginia Blue Ridge, are composed of this rock. On the west, a narrow belt of smaller peaks is composed chiefly of a hard, white quartzite, called Antietam north of Roanoke, and Erwin to the south. It is of lower Cambrian age. In some parts of the area the highest ridges are between the western and eastern borders, and consist of a formation called Unicoi quartzite to the south, and Weverton sandstone and the Loudoun formation in the north, also of lower Cambrian age.

There appears to be little virgin forest left in the area. Ranger L. R. Smith of the Jefferson National Forest says that there is some woodland, relatively untouched by either burning or logging in his district on the headwaters of Stony Creek on the Bedford County side of the Blue Ridge. From my personal observation in this region I should say it is characterized by large trees of Canadian hemlock, up



to three feet in diameter. The largest tree so far found in the whole area is located here, a tulip poplar just over six feet in diameter, right beside the Parkway.

Ranger B. A. Eger of the George Washington National Forest likewise believes little virgin forest is left in his district, the nearest approach to it being in the ravine along Staton's Creek, below Staton's Falls, in Amherst County.

Each of the two rangers recalls four major fires in his district. In the Natural Bridge district south of the James River, there was a "tremendous fire" about 1880-85, spreading from Stony Creek in Bedford County northward to the James in two or three days. In 1920 there was a fire between Glasgow and Matt's Creek near Snowden, involving Big Cove in the gorge the James has cut through the Blue Ridge. This was chiefly in Bedford County. In 1930 there was a fire covering about 10,000 acres on Cove Mountain in Botetourt County, called the "South End Fire". This was a crown fire. The most recent fire was the "Blue Fire", also a crown fire, covering about 10,000 acres on the Blue Ridge in Bedford and Botetourt Counties, just west of Goose Creek valley.

In the Pedlar River district north of the James, there were two fires about 1894, one in the Piney River-Cardinal Mountain area of Nelson County, and in the Rocky Row-Bluff Mountain area of Amherst County. About 1918 fire swept from the James to Pedlar River in Amherst County, and in 1930 or 1931 there was a fire on Cellar Mountain and in the St. Mary's River valley in Augusta County.

The writer is keenly aware of rather glaring gaps in this list, particularly in the Cyperaceae and Gramineae. Much also remains to be done on the trees and shrubs of the area. Otherwise it has been the constant purpose to collect from as diverse habitats as possible,—the dry, quartzite ridges and the wonderfully rich, moist ravines of the hypersthene granodiorite areas. This rock is said to yield potash on weathering, and it does contain feldspar. In most of the mountains where this rock outcrops there is a deep, black loam.

The principal earliest objective in this work was to undertake an ecological study of the area, but a floristic and taxonomic foundation seemed to be a prerequisite. It was surprising, in the beginning of this study of mountain plants, to find *Trautvetteria* and *Physocarpus* growing on the very top of Apple Orchard Mountain, the highest summit in the area. These had been thought of as streamside

plants. The differences between plants of ridges and ravines; north- and south-facing slopes; quartzite-derived soils and those formed from the hypersthene granodiorite; and between severely burned regions and those untouched by fire, are some of the environmental extremes that invite one to go on and on in the study of the whole area.

Another ecological situation which invites investigation is the occurrence of northern plants on the higher summits. A number of these have been found, but few compared with such things as *Abies intermedia*, *Arenaria groenlandica*, *Lycopodium selago*, *Dryopteris disjuncta* (*Phegopteris Dryopteris*) and *Potentilla tridentata*, found in the Shenandoah National Park.

Fire has of course been an ecological factor of major importance. While many of the major fires have been started accidentally or unintentionally, it is doubtless true that much burning was done purposely. The beginnings of the old Natural Bridge National Forest were shortly after the passage of the Weeks Law in 1911. Previous to this time residents in or near the mountains set fire to the woods annually for various reasons. It was believed that burning made better grazing, or eliminated snakes, other "vermin" and undesirable weeds and insects. One long-time resident told of riding horseback along the crest of the ridge in the autumn, in the days before the federal government bought the land, and throwing lighted matches into the leaves. The purpose of this burning was to produce a better crop of blueberries. To prove his point, he told of a small railroad station at the foot of the mountain where blueberries were formerly shipped every year by the carload, where now none are shipped.

In the earlier work collections were not numbered. Many of these were sent to the herbarium of the University of Virginia, for which I have no duplicates. There are also duplicate sheets at the University herbarium which are unnumbered, but whose counterparts in my herbarium at Lynchburg College are numbered. Beginning with 1947 all duplicates sent to other herbaria were numbered. The 1947 collections began with 1134.

I am especially grateful to the General Education Board of New York City for a substantial grant defraying expenses and providing much necessary materiel for the work in 1947. Without this aid that work would have been impossible. Dr. Riley B. Montgomery, President of Lynchburg College, who instituted the policy of sab-

batical leaves, gave much invaluable aid and encouragement.

A number of other botanists rendered much help in the work in 1947, and to these I am deeply grateful. Professor M. L. Fernald of Gray Herbarium, Harvard University, checked practically all of the 1947 collections, about 800 sheets. I am particularly indebted to him for correcting identifications and nomenclature. Professor A. B. Massey, of the Virginia Polytechnic Institute, Chairman of the Committee on State Flora of the Virginia Academy of Science, gave much helpful advice in the planning stages of the work in 1947. Several specialists on certain groups identified material sent them: Dr. Carleton R. Ball, for *Salix*; Dr. W. H. Camp, the Ericaceae; Dr. Ray S. Friesner, *Solidago*; F. J. Hermann, *Carex*; Dr. Paul M. Patterson, *Viola*; Dr. Francis W. Pennell, the Scrophulariaceae; Dr. C. O. Rosendahl, *Heuchera*; Jason R. Swallen, the Gramineae; and Dr. Edgar T. Wherry, *Paronychia*.

In returning to field work in 1947, after the restricted driving of the war years, and little active collecting in the few years before the war, I found that I had forgotten many of the little mountain roads and trails. The Blue Ridge Parkway had been graded through the whole area, also, except for an eight mile hiatus just north of the James River. I badly needed a reorientation to the whole area. Several individuals were of much assistance in this. Warden J. W. Luck of the National Park Service accompanied me on two of his days-off, and I spent a day with him while he was on duty. On one of these trips we climbed Headforemost Mountain, one of the few summits I had not visited. There were no trails on Headforemost. We left markings for back-trailing, but there were so many fresh, criss-crossing bear trails that we had difficulty locating our return trail.

Ranger L. R. Smith of the Jefferson National Forest, at Natural Bridge Station, and Ranger B. A. Eger of the George Washington National Forest, at Buena Vista, gave much valuable assistance in the form of large, detailed maps, information on trails, fires and other conditions in their respective ranger districts. Alfred Percy, at that time President of the Natural Bridge Appalachian Trail Club of Lynchburg, who had had an active part in relocating the Trail following construction of the Parkway, spent a day with me in the northern part of the area. In the earlier stages of the work, H. M. Sears, then Supervisor of the former Natural Bridge National Forest, gave much help and encouragement. To these five men I am also very grateful.

Two of my students, Ben F. Vaughan III and Lester I. Sutphin, gave valuable assistance during the spring of 1947. They accompanied me on a number of trips, and helped much in the collections from coniferous trees.

There have recently appeared some new topographic sheets for parts of this area which have been a great improvement over those available when the work was first started. There are some errors on these new sheets, however, which might be misleading.

Four papers on the flora of nearby areas have been of particular help, especially on nomenclature and in the organization of this report, those by Hermann on the Washington, D. C., area, by Allard and Leonard on the Bull Run Mountain area, and two by Fosberg and Walker, on the Shenandoah National Park. These are cited in the bibliography.

This report is on a project originally conceived as a part of the total plan of the Committee on State Flora of the Virginia Academy of Science, to prepare a catalogue of Virginia plants. A number of contributions to this end from other botanists have appeared, and some are listed in the bibliography. Professor Fernald's series of papers in *Rhodora* on plants of the Virginia coastal plain is the most notable of these. The nomenclature in general follows that of the 7th edition of Gray's Manual, but certain changes were made to conform with more recent studies.

Numbers following names of plants refer to sheets in my personal herbarium at Lynchburg College. Following are designations used where duplicate sheets were sent to other herbaria, these being for the most part the ones with which the specialists, named above, are associated:

Butler University (B)

Gray Herbarium, Harvard University (G)

National Arboretum Herbarium (NAH)

Dr. P. M. Patterson (Patt)

The Philadelphia Academy of the Natural Sciences (Phil)

United States National Museum (US)

University of Minnesota (M)

University of Virginia (Va)

#### **PTERIDOPHYTA—Ferns and Allies**

##### **OPHIOGLOSSACEAE—Adder's Tongue Family**

*BOTRYCHUM DISSECTUM* Spreng. Grape Fern. Bedford, 1222, (Va).

*BOTRYCHUM DISSECTUM* Spreng. var. *OBLIQUUM* (Muhl.) Clute. Grape

Fern. Bedford, 1221, (G, Va); Botetourt, 54.

*BOTRYCHIUM MATRICARIAEFOLIUM* A. Br. Botetourt, 52.

*BOTRYCHIUM VIRGINIANUM* (L.) Sw. Rattlesnake Fern. Bedford, 1456, (G, Va); Rockbridge, 1548, (G, Va).

#### OSMUNDACEAE—Royal Fern Family

*OSMUNDA CINNAMOMEA* L. Cinnamon Fern. Bedford, 1471, (G, Va); Nelson, 881.

*OSMUNDA CLAYTONIANA* L. Interrupted Fern. Bedford, 51; Nelson, 880; Augusta, 922.

*OSMUNDA REGALIS* L. var. *SPECTABILIS* (Willd.) Gray. Royal Fern. Bedford, 1481, (G, Va); Augusta, 921.

#### POLYPODIACEAE—Fern Family

*ADIANTUM PEDATUM* L. Maidenhair Fern. Bedford, 11

*ASPLENIUM MONTANUM* Willd. Mountain Spleenwort. Rockbridge, 1229, (G, Va).

*ASPLENIUM PLATYNEURON* (L.) Oakes. Ebony Spleenwort. Bedford, 23, 1214, (G, Va); Rockbridge, 1540, (G, Va); Augusta, 1411, (G, Va).

*ASPLENIUM TRICHOMANES* L. Maidenhair Spleenwort. Bedford, 1925; Botetourt, 1197, (G, Va); Amherst, 20, 1234, (G, Va); Rockbridge, 883; Nelson, 883A.

*ATHYRIUM ANGUSTUM* (Willd.) Presl. (*Asplenium filix-femina* of manuals.) Lady Fern. Bedford, 28; Botetourt, 29.

*ATHYRIUM FILIX-FEMINA* (L.) Roth var. *MICHAUXII* (Spreng.) Farw. f. *ELATIUS* (Link) Clute. Rockbridge, 1747, (G, Va).

*CAMPTOSORUS RHIZOPHYLLUS* (L.) Link. Walking Fern. Rockbridge, 30, 877, 1357, (G, Va).

*CHEILANTHES VESTITA* (Spreng.) Sw. (*C. lanosa* (Michx.) D. C. Eaton; *Rhodora* 48: 383. 1946.) Hairý Lip-fern. Botetourt, 1206, (G, Va); Amherst, 13, 14, 927.

*CYSTOPTERIS BULBIFERA* (L.) Bernh. Bulbiferous Bladder Fern. Rockbridge, 1355, (Va).

*CYSTOPTERIS FRAGILIS* (L.) Bernh. var. *MACKAYI* Lawson. Fragile Bladder Fern. Rockbridge, 39.

*CYSTOPTERIS FRAGILIS* (L.) Bernh. var. *PROTRUSA* Weatherby. Bedford, 40.

*DENNSTAEDTIA PUNCTILOBULA* (Michx.) Moore. Hay-scented Fern. Bedford, 45; Botetourt, 46; Amherst, 47; Nelson, 936.

*DRYOPTERIS GOLDIANA* (Hook.) Gray. Goldie's Shield Fern. Botetourt, 36, 37, 1904, (G, Va).

*DRYOPTERIS HEXAGONOPTERA* (Michx.) C. Chr. Broad Beech Fern.



Bedford, 4, 8, 1718, (Va); Botetourt, 7; Rockbridge, 5, 6; Nelson, 879; Augusta, 913.

*DRYOPTERIS MARGINALIS* (L.) Gray. Marginal Shield Fern. Bedford, 35; Botetourt, 34.

*DRYOPTERIS NOVEBORACENSIS* (L.) Gray. New York Fern. Bedford, 32.

*DRYOPTERIS SPINULOSA* (O.F. Muller) Watt. (*Aspidium spinulosum* (O.F. Muller) Sw.; *Dryopteris austriaca* (Jacq.) Woytnar) Spinulose Shield Fern. Augusta, 882.

*ONOCLEA SENSIBILIS* L. Sensitive Fern. Bedford, 50, 1472, (G, Va).

*PELLAEA ATROPURPUREA* (L.) Link. Purple Cliff-brake. Amherst, 929; Nelson, 928.

*POLYPODIUM POLYPODIODES* (L.) Watt. var. *MICHAUXIANUM* Weatherby Little Gray Polypody. Botetourt, 1207, (G, Va).

*POLYPODIUM VIRGINIANUM* L. Common Polypody. Bedford, 1215, (Va); Botetourt, 1193, (Va); 1204, (G, Va); Rockbridge, 1361, (G, Va); Nelson, 1328, (Va).

*POLYSTICHUM ACROSTICHOIDES* (Michx.) Schott. Christmas Fern. Rockbridge, 1264, (G, Va).

*POLYSTICHUM ACROSTICHOIDES* (Michx.) Schott. f. *INCISUM* (Gray) Gilbert (in same clump as true species.) Rockbridge, 1264A, (G, Va).

*PTERIDIUM AQUILINUM* (L.) Kuhn var. *LATIUSCULUM* (Desv.) Underw. Bracken. Botetourt, 1587, (G, Va); Amherst, 12.

*WOODSIA ILVENSIS* (L.) R. Br. Rusty Woodsia. Nelson, 878.

*WOODSIA OBTUSA* (Spreng.) Torr. Obtuse Woodsia. Botetourt, 42; Nelson, 872; Augusta, 876.

*WOODWARDIA VIRGINICA* (L.) Sm. (*Anchistea virginica* (L.) Presl) Virginia Chain-fern. Augusta, 17, (G, Va), 18.

#### EQUISETACEAE—Horsetail Family

*EQUISETUM ARVENSE* L. Field Horsetail. Rockbridge, 1358, (G, Va).

#### LYCOPODIACEAE—Club Moss Family

*LYCOPodium COMPLANATUM* L. var. *FLABELLIFORME* Fern. Running Cedar. Bedford, 67; Botetourt, 1203, (G, Va); Amherst, 1299, (G, Va).

*LYCOPodium LUCIDULUM* Michx. Shining Club Moss. Bedford, 60, 63; Amherst, 62; Nelson 63A.

*LYCOPodium OBSCURUM* L. Ground Pine. Bedford, 1387, (G, Va); Augusta, 65.

*LYCOPodium TRISTACHYUM* Pursh. Slender Ground Pine. Bedford, 69; Amherst, 1245, (G, Va).



## SPERMATOPHYTA—Seed Plants

## PINACEAE—Pine Family

- THUJA OCCIDENTALIS* L. White Cedar. Rockbridge, 1353, (G, Va).
- JUNIPERUS VIRGINIANA* L. Red Cedar. Bedford, 1138, (G, Va), 1220, (G, Va); Botetourt, 1195, (Va), 1202, (G, Va), 1209, (Va); Amherst, 1190, (Va); Rockbridge, 1168, (Va); Nelson, 1177, (Va); Augusta, 1175, (Va).
- PINUS ECHINATA*. Mill. Yellow Pine. Bedford, 1212, (Va.); Botetourt, 1191, (Va); Amherst, 1226, (Va); Rockbridge, 1167, (G, Va), 1228, (G, Va).
- PINUS PUNGENS* Lamb. Table Mountain Pine. Bedford, 1146, (Va), 1155, (Va); Botetourt, 1144, (Va); Amherst, 1225, (Va); Rockbridge, 1227, (G, Va); Nelson, 1169, (Va); Augusta, 1174, (G, Va).
- PINUS RIGIDA* Mill. Pitch Pine. Bedford, 1140, (Va), 1154, (Va); Botetourt, 1142, (Va), 1149, (Va); Amherst, 1161, (Va); Rockbridge, 1165, (Va); Nelson, 1171, (Va); Augusta, 1172, (G, Va).
- PINUS STROBUS* L. White Pine. Bedford, 1137, (Va); Botetourt, 1141, (Va); Amherst, 1186, (Va); Rockbridge, 1158, (G, Va); Nelson, 1184, (G, Va); Augusta, 1182, (Va).
- PINUS VIRGINIANA* Mill. Scrub Pine. Bedford, 1139, (Va); Botetourt, 1143, (Va); Amherst, 1162, (Va); Rockbridge, 1166, (G, Va); Nelson, 1178, (Va); Augusta, 1176, (G, Va).
- TSUGA CANADENSIS* (L). Cart. Hemlock. Bedford, 1136, (Va); Botetourt, 1145, (Va); Amherst, 1164, (Va); Rockbridge, 1156, (G, Va); Nelson, 1185, (Va); Augusta, 1179, (G, Va).
- TSUGA CAROLINIANA* Engelm. Carolina Hemlock. Bedford, 1151, (Va); Botetourt, 1742, (Va); Rockbridge, 1160, (G, Va).

## TYPHACEAE—Cat-tail Family

- TYPHA LATIFOLIA* L. Broad-leaved Cat-tail. Bedford, 1486, (Va).

## ALISMACEAE—Water Plantain Family

- SAGITTARIA LATIFOLIA* var. *PUBESCENS* (Muhl.) J. G. Sm. Broad-leaved Arrow-head. Nelson, 80.

## GRAMINEAE—Grass Family

- DESCHAMPSIA FLEXUOSA* (L.) Trin. Wavy Hair-grass. Amherst, 85, 1047
- ERIANTHUS GIGANTEUS* (Walt.) Muhl. Sugarcane Plume-grass. Bedford, 81, 1845, (G, Va).
- FESTUCA OBTUSA* Spreng. (*F. nutans* Spr.) Nodding Fescue. Bedford, 1677, (G, Va, US).
- GLYCERIA STRIATA* (Lam.) Hitchc. Fowl Manna Grass. Nelson, 869.

- HOLCUS LANATUS* L. Velvet Grass. Augusta, 985.  
*HYSTRIX PATULA* Moench. Bottle-brush Grass. Amherst, 87.  
*LEERSIA ORYZOIDES* (L.) Sw. Rice Cut-grass; Saw-grass. Amherst, 84.  
*POA CUSPIDATA* Nutt. (*P. autumnalis* Muhl., sensu Fernald). Short-leaved Spear Grass. Amherst, 1235, (Va. US), 1246, (G, Va, US); Rockbridge, 1254, (G, Va, US).  
*SORGHASTRUM NUTANS* (L.) Nash. Indian Grass. Amherst, 82.

## CYPERACEAE—Sedge Family

- BULBOSTYLIS CAPILLARIS* (L.) Clarke. Nelson, 91.  
*CAREX ARTITECTA* Mack. Nelson, 1325, (G, Va, NAH).  
*CAREX COMMUNIS* Bailey. Fibrous-rooted Sedge. Rockbridge, 1263, (Va, NAH).  
*CAREX EMORYI* Dewey (?) Nelson, 1278, (Va, NAH).  
*CAREX NIGROMARGINATA* Schwein. Black-edged Sedge. Nelson, 1282, (G, Va, NAH).  
*CAREX PENNSYLVANICA* Lam. Pennsylvania Sedge. Bedford, 1382, (Va, NAH).  
*CAREX TORTA* Boott. Twisted Sedge. Nelson, 1326, (G, Va, NAH).  
*CYPERUS FLAVESCENS* L. Yellow Cyperus. Nelson, 88.  
*CYPERUS STRIGOSUS* L. Straw-colored Cyperus. Amherst, 89.  
*DULICHIMUM ARUNDINACEUM* (L.) Britt. Dulichium. Augusta, 955, 956.  
*ERIOPHORUM VIRGINICUM* L. Virginia Cotton Grass. Augusta, 984.  
*SCIRPUS CYPERINUS* (L.) Kunth. Wool Grass. Amherst, 92.

## ARACEAE—Arum Family

- ACORUS CALAMUS* L. Sweet Flag. Bedford, 1476, (G, Va).  
*ARISAEMA ATRORUBENS* (Ait.) Blume. Jack-in-the-Pulpit. Botetourt, 1515, (G, Va); Augusta, 1427.  
*ORONTIUM AQUATICUM* L. Golden Club. Augusta, 93.

## COMMELINACEAE—Day Flower Family

- COMMELINA VIRGINICA* L. Day Flower. Bedford, 1908, (G, Va).  
*TRADESCANTIA VIRGINIANA* L. Spiderwort. Bedford, 95; Amherst, 94, 1346, (G, Va); Augusta, 960.

## JUNCACEAE—Rush Family

- LUZULA ECHINATA* (Small) F. J. Hermann. Wood Rush. Bedford, 1388, (G, Va, NAH); Amherst, 1239, (G, Va, NAH).

## LILIACEAE—Lily Family

- ALLIUM CERNUUM* Roth. Wild Onion. Amherst, 856, 1809, (G, Va); Rockbridge, 1808, (G, Va); Nelson, 862, 897, 991.  
*AMIANTHIUM MUSCAETOXICUM* (Walt.) Gray. Fly Poison. Bedford, 1482, (G, Va); Botetourt, 103, 104; Amherst, 106; Rockbridge, 105;

Nelson, 892; Augusta, 963.

*CHAMAELIRIUM LUTEUM* (L.) Gray. Blazing Star; Devil's Bit; Star Root. Botetourt, 1583, (G, Va).

*CLINTONIA BOREALIS* (Ait.) Raf. Yellow Clintonia. Bedford, 129, 130; Botetourt, 885.

*CLINTONIA UMBELLULATA* (Michx.) Morong. White Clintonia. Bedford, 131, 1496, (G, Va).

*CONVALLARIA MAJALIS* L. Lily-of-the-Valley. Bedford, 140; Botetourt, 139; Rockbridge, 141; Augusta, 959.

*ERYTHRONIUM AMERICANUM* Ker. Yellow Adder's-tongue; Dogtooth Violet; Trout Lily. Botetourt, 1196, (G, Va).

*HELONIAS BULLATA* L. Swamp Pink; Star Root (locally). Augusta, 98, 99, 100.

*LILIUM CANADENSE* L., f. *RUBRUM* Britt. Nodding Lily. Bedford, 1133, 1715, (G, Va); Botetourt, 1056; Nelson, 861; Augusta, 974.

*LILIUM CANADENSE* L. var. *EDITORUM* Fern. Bedford, 124; Botetourt, 125.

*LILIUM PHILADELPHICUM* L. Wood Lily. Botetourt, 1055; Augusta, 122A.

*LILIUM SUPERBUM* L. Turk's-cap Lily. Amherst, 1746, (G, Va); Botetourt, 1711, (G, Va), 1738, (Va).

*MAIANTHEMUM CANADENSE* Desfr. Wild Lily-of-the-Valley. Bedford, 133, 135; Amherst, 134.

*MELANTHIUM LATIFOLIUM* Desr. Bunch-flower. Botetourt, 108, 976; Amherst, 1803; Rockbridge, 1810, (G, Va).

*MELANTHIUM PARVIFLORUM* (Michx.) Wats. Bedford, 1664, (G, Va); Botetourt, 109; Rockbridge, 110.

*POLYGONATUM BIFLORUM* (Walt.) Ell. Solomon's Seal. Botetourt, 138, 1516, (G, Va); Nelson, 1329, (Va).

*SMILACINA RACEMOSA* (L.) Desf. False Solomon's Seal. Botetourt, 1745, (Va).

*SMILAX GLAUCA* Walt. var. *LEUROPHYLLA* Blake. Green Brier; Bramble. Botetourt, 1601, (G, Va).

*SMILAX HERBACEA* L. Carrion Flower. Botetourt, 149, 1602, (G, Va); Nelson, 864.

*SMILAX HISPIDA* Muhl. Bristly Green Brier. Bedford, 1652, (Va); Botetourt, 1732, (G, Va); Rockbridge, 1796, (G, Va).

*SMILAX ROTUNDIFOLIA* L. Green Brier. Bedford, 152; Botetourt, 1600, (G, Va).

*STREPTOPUS AMPLEXIFOLIUS* (L.) DC. Clasping-leaved Twisted-stalk. Botetourt, 137A.

*TRILLIUM ERECTUM* L. Ill-scented Wake-robin. Nelson, 143, 144, 1295, (G, Va).

*TRILLIUM GRANDIFLORUM* (Michx.) Salisb. Large-flowered Wake-robin. Bedford, 145, 146, 1364, (G, Va); Rockbridge, 1354, (G, Va); Amherst, 1936; Nelson, 1294, (Va).

*UVULARIA GRANDIFLORA* J. E. Smith. Large-flowered Bellwort. Bedford, 1368, (G, Va); Botetourt, 112; Rockbridge, 1359, (G, Va); Nelson, 1296, (Va).

*UVULARIA PERFOLIATA* L. Perfoliate Bellwort. Botetourt, 113, 114, 117, 1057; Amherst, 1941; Augusta, 1397, (G, Va).

*UVULARIA PUBERULA* Michx. Mountain Bellwort. Bedford 946; Augusta, 119.

*UVULARIA SESSILIFOLIA* L. Sessile-leaved Bellwort. Amherst, 116, 118; Nelson, 1963; Augusta, 1405, (G, Va).

*VERATRUM VIRIDE* Ait. American White Hellebore. Bedford, 111.

*XEROPHYLLUM ASPHODELOIDES* (L.) Nutt. Turkey-beard. Bedford, 845, 1081.

#### DIOSCOREACEAE—Yam Family

*DIOSCOREA VILLOSA* L. Wild Yam. Bedford, 1699, (G, Va); Botetourt, 154, 1607, (G, Va); Amherst, 155.

#### AMARYLLIDACEAE—Amaryllis Family

*HYPOXIS HIRSUTA* (L.) Coville. Yellow Star Grass. Bedford, 1479, (Va); Botetourt, 1611, (G, Va).

#### IRIDACEAE—Iris Family

*BELAMCANDA CHINENSIS* (L.) DC. Blackberry Lily. Nelson, 158.

*IRIS CRISTATA* Ait. Crested Dwarf Iris. Bedford, 157, 943; Amherst, 156.

*IRIS Verna* L. Dwarf Iris. Bedford, 942; Botetourt, 1579, (G, Va); Rockbridge, 1347, (G, Va); Nelson, 1959; Augusta, 1423, (G, Va).

#### ORCHIDACEAE—Orchid Family

*CALOPOGON PULCHELLUS* (Salisb.) R. Br. Grass Pink. Augusta, 949, 950.  
*CORALLORRHIZA MACULATA* Raf. Coral Root. Bedford, 1773; Augusta, 986.

*CYPRIPEDIUM ACAULE* Ait. Pink Lady's Slipper. Botetourt, 1588, (G, Va).

*CYPRIPEDIUM CALCEOLUS* L. var. *PUBESCENS* (Willd.) Correl. (*Cypripedium parviflorum* Salisb.) Yellow Lady's Slipper. Bedford, 907; Amherst, 159.

*CYPRIPEDIUM PARVIFLORUM* var. *PUBESCENS* (Willd.) Knight. Amherst, 160.

*GOODYERA PUBESCENS* (Willd.) R. Br. Downy Rattlesnake Plantain.

- Rockbridge, 1259, (G. Va).
- HABENARIA CILIARIS (L.) R. Br. Yellow-fringed Orchis. Amherst, 165; Rockbridge, 953; Augusta, 952.
- HABENARIA CLAVELLATA (Michx.) Spreng. Small Green Wood Orchis. Amherst, 162; Augusta, 954.
- HABENARIA FIMBRIATA (Ait.) R. Br. Purple-fringed Orchis. Botetourt, 1058.
- HABENARIA VIRIDIS (L.) R. Br. var. BRACTEATA (Muhl.) Gray. Long-bracted Orchis. Rockbridge, 161.
- ISOTRIA VERTICILLATA (Willd.) Raf. (*Pogonia verticillata* (Willd.) Nutt.) Whorled Pogonia. Botetourt, 1584, (G, Va); Augusta, 168.
- MALAXIS UNIFOLIA (Michx.) BSP. Green Adder's-mouth. Bedford, 1765, (G, Va).
- ORCHIS SPECTABILIS L. Showy Orchis. Amherst, 1939; Nelson, 872A.
- POGONIA OPHIOGLOSSOIDES (L.) Ker. Rose Pogonia; Snake Mouth. Augusta, 951.
- SPIRANTHES CERNUA (L.) Richard. Nodding Ladies'-tresses. Bedford, 1907, (G, Va).
- TIPULARIA DISCOLOR (Pursh) Nutt. Crane-fly Orchis. Bedford, 1213, (G, Va); Rockbridge, 1262, (Va); Amherst, 1244, (Va).
- SALICACEAE—Willow Family
- POPULUS ALBA L. White Poplar. Bedford, 1468, (G, Va).
- POPULUS GRANDIDENTATA Michx. Large-Toothed Aspen. Bedford, 1697, (G, Va).
- SALIX HUMILIS Marsh. Prairie Willow. Bedford, 182; Amherst, 181.
- SALIX HUMILIS Marsh. var. HYPORHYSA Fern. (*S. humilis* var. *rigidiuscula* (Anderss.) Rob. & Fern., sensu C. R. Ball.) Bedford, 1673, (G), 1695, (G, Va), 1724, (G), 1725, (G); Amherst, 1804, (G).
- SALIX NIGRA Marsh. Black Willow. Botetourt, 1628, (G, Va).
- SALIX SERICEA Marsh. Silky Willow. Bedford, 1688, (G), 1694, (G, Va); Botetourt, 1693, (Va); Nelson, 1879, (G, Va).

#### MYRICACEAE—Sweet Gale Family

- COMPTONIA PEREGRINA var. ASPLENIFOLIA (L.) Fern. Sweet Fern. Bedford, 1511, (G, Va); Botetourt, 1509, G, Va); Nesson, 1954.

#### JUGLANDACEAE—Walnut Family

- CARYA CORDIFORMIS (Wang.) Koch. Bitternut; Swamp Hickory. Bedford, 1512, (G, Va), 1650, (G, Va); Rockbridge, 184.
- CARYA GLABRA (Mill.) Sweet. Pignut. Botetourt, 1637, (G, Va).
- CARYA OVALIS (Wang.) Sarg. Red Hickory. Botetourt, 1633, (G, Va).
- CARYA OVATA (Mill.) K. Koch. Shag-bark Hickory. Bedford, 1649,



(G, Va).

*CARYA TOMENTOSA* Nutt. (*C. alba* of auth.) Mockernut Hickory. Botetourt, 1489, (G, Va).

*JUGLANS CINEREA* L. Butternut. Bedford, 1217; Botetourt, 1488, (G, Va); Amherst, 1823, (G, Va); Nelson, 1180.

*JUGLANS NIGRA* L. Black Walnut. Bedford, 1545, (Va), 1691, (Va); Botetourt, 1632, (G, Va); Rockbridge, 1552, (G, Va), 1834, (G, Va).

#### BETULACEAE—Birch Family

*BETULA LENTA* L. Sweet Birch; Mountain Mahogany. Bedford, 188; Botetourt, 1605, (G, Va); Rockbridge, 1751, (G, Va).

*BETULA LUTEA* Michx. f. Yellow Birch. Bedford, 1723, (G, Va); Botetourt, 1727, (G, Va).

*BETULA NIGRA* L. River Birch. Bedford, 189.

*CARPINUS CAROLINIANA* Walt. var. *VIRGINIANA* (Marsh.) Fern. Water Beech; American Hornbeam; Ironwood. Nelson, 1858, (G, Va).

*CORYLUS AMERICANA* Walt. Hazelnut. Rockbridge, 1750, (G, Va).

*CORYLUS CORNUTA* Marsh. (*C. rostrata* Ait.) Beaked Hazelnut. Bedford, 1768, (G, Va); Botetourt, 1721; (G, Va); Amherst, 185, 186.

*OSTRYA VIRGINIANA* (Mill.) K. Koch. Hop Hornbeam. Bedford, 187; Botetourt, 1726, (G, Va); Rockbridge, 1539, (G, Va); Nelson, 1821, (G, Va); Augusta, 1944.

#### FAGACEAE—Beech Family

*CASTANEA DENTATA* (Marsh.) Borkh. Chestnut. Bedford, 191; Botetourt, 1577, (G, Va); Rockbridge, 1526, (G, Va); Amherst, 1807, (G, Va).

*CASTANEA PUMILA* (L.) Mill. Chinquapin. Bedford, 1615, (G, Va); Botetourt, 1571, (G, Va).

*FAGUS GRANDIFOLIA* Ehrh. Beech. Bedford, 1934.

*QUERCUS ALBA* L. White Oak. Bedford, 1772, (G, Va); Botetourt, 1576.

*QUERCUS COCCINEA* Muenchh. Scarlet Oak. Botetourt, 1592, (G, Va); Rockbridge, 1531, (G, Va).

*QUERCUS ILICIFOLIA* Wang. Bear Oak; Kick-shins. Botetourt, 1508, (G, Va); Rockbridge, 1528, (G, Va).

*QUERCUS MARILANDICA* (L.) Muenchh. Black Jack Oak. Bedford, 1616, (G, Va).

*QUERCUS PRINUS* L. Chestnut Oak. Bedford, 1562, (G, Va); Botetourt, 1589, (Va); Rockbridge, 1527, (Va); Amherst, 194.

*QUERCUS RUBRA* L. (*Q. borealis* Michx. f.; *Q. borealis* Michx. var. *maxima* (Marsh.) Ashe; *Q. maxima* (Marsh.) Ashe. Red Oak.



Bedford, 1651, (G, Va); Botetourt, 1634, (G, Va); Rockbridge, 1532, (Va), 1569, (G, Va); Amherst, 195.

#### ULMACEAE—Elm Family

ULMUS AMERICANA L. American Elm. Amherst, 1251, (G, Va); Nelson, 1277, (G, Va).

ULMUS AMERICANA L., f. LAEVIOR Fern. Bedford, 1479, (G, Va).

ULMUS RUBRA Muhl. (*U. fulva* Michx.) Slippery Elm. Rockbridge, 1554, (G, Va); Nelson, 1865, (G, Va).

#### URTICACEAE—Nettle Family

PILEA PUMILA (L.) Gray. Bedford, 198.

#### LORANTHACEAE—Mistletoe Family

PHORADENDRON FLAVESCENS (Pursh) Nutt. Mistletoe. Amherst, 1189, (G, Va).

#### ARISTOLOCHACEAE—Dutchman's Pipe Family

ARISTOLOCHIA DURIOR Hill. Dutchman's Pipe Vine. Bedford, 203; Botetourt, 1487, (G, Va); Rockbridge, 1543, (G, Va); Nelson, 202.

ASARUM CANADENSE L. var. AMBIGUUM (Bickn.) Farwell. Wild Ginger; Cold Cup. Bedford, 1372, (G, Va); Rockbridge, 1356, (G, Va); Amherst, 1937; Augusta, 1949.

ASARUM VIRGINICUM L. Wild Ginger. Botetourt, 1194, (G, Va); Rockbridge, 1260, (G, Va).

#### POLYGONACEAE—Buckwheat Family

POLYGONUM CILINODE Michx., var. LAEVIGATUM Fern. Fringed Black Bindweed. Botetourt, 1739, (G, Va). ("Heretofore known only from summit of Spruce Knob, West Va."—Dr. M. L. Fernald.)

POLYGONUM CONVULVULUS L. Black Bindweed. Bedford, 1678, (G, Va).

POLYGONUM PENNSYLVANICUM L. Bedford, 206.

POLYGONUM SAGITTATUM L. Tear-thumb. Bedford, 208; Amherst, 207, 1828, (G, Va); Nelson, 1861, (G, Va).

POLYGONUM SCANDENS L. Climbing False Buckwheat. Bedford, 1897, (G, Va).

#### ILLECEBRACEAE—Knotwort Family

PARONYCHIA ARGYROCOMA (Michx.) Nutt. Whitlow-wort. Amherst, 211, 1800, (G, Va); Rockbridge, 213; Augusta, 212.

PARONYCHIA CANADENSIS (L.) Wood. Forked Chickweed. Bedford, 210; Nelson, 1859, (G, Va).

PARONYCHIA FASTIGIATA (Raf.) Fern. Bedford, 209; Rockbridge, 1832, (G, Va).

#### AIZOACEAE—Ice Plant Family

MOLLUGO VERTICILLATA L. Bedford, 216.

## CARYOPHYLLACEAE—Pink Family

- AGROSTEMMA GITHAGO L. Corn Cockle. Amherst, 1519.  
 ARENARIA STRICTA Michx. Rock Sandwort. Nelson, 866.  
 HOLOSTEUM UMBELLATUM L. Jagged Chickweed. Amherst, 1248, (G, Va).  
 LYCHNIS ALBA Mill. White Campion. Bedford, 220.  
 SAPONARIA OFFICINALIS L. Bouncing Bet. Bedford, 231.  
 SILENE ARMERIA L. Sweet William Catchfly. Bedford, 222.  
 SILENE CAROLINIANA Walt. var. PENNSYLVANICA (Michx.) Fern. Wild Pink. Amherst, 226; Nelson, 1354; (G, Va); Augusta, 1415, (G, Va).  
 SILENE CUCUBALUS Wibel. (*S. latifolia* (Mill.) Britten & Rendle) Bladder Campion. Bedford, 230; Amherst, 1518, (G, Va).  
 SILENE DICHOTOMA Ehrh. Forked Catchfly. Bedford, 223; Botetourt, 1612, (G, Va); Rockbridge, 1831, (G, Va).  
 SILENE NOCTIFLORA L. Night-flowering Catchfly. Bedford, 225; Amherst, 224.  
 SILENE STELLATA (L.) Ait. Starry Campion. Rockbridge, 229, 1789, (G, Va); Amherst, 228.  
 SILENE VIRGINICA L. Fire Pink. Botetourt, 1502, (G, Va).  
 STELLARIA PUBERA Michx. Great Chickweed. Bedford, 1367, (Va); Amherst, 219, 1242, 1243, (Va); Nelson, 1275, (Va), 1318, (G, Va); Augusta, 1400, (G, Va).

## PORTULACACEAE—Purslane Family

- CLAYTONIA CAROLINIANA Michx. Carolina Spring Beauty. Nelson, 1320, (G, Va).

## NYMPHAEACEAE—Water Lily Family

- BRASENIA SCHREBERI Gmel. Water-shield. Augusta, 975.

## RANUNCULACEAE—Buttercup Family

- ACONITUM UNCINATUM L. Monk's Hood. Bedford, 254; Botetourt, 1901, (G, Va); Amherst, 257; Nelson, 255, 255A, 256.  
 ACTAEA PACHYPODA Ell. (*A. alba* (L.) Mill.) White Baneberry. Botetourt, 1733, (G, Va); Rockbridge, 261; Amherst, 262.  
 ANEMONE LANCIFOLIA Pursh. (*A. quinquefolia* L., *A. quinquefolia* L. var. *lancifolia* (Pursh) Fosberg; *A. trifolia*, auth.) Mountain Anemone. Bedford, 240, 941, 1374 (G, Va); Rockbridge, 1942; Amherst, 239, 239A; Nelson, 241; Augusta, 1395, (G, Va).  
 ANEMONE VIRGINIANA L. Tall Anemone. Bedford, 238.  
 ANEMONELLA THALICTROIDES (L.) Spach. Rue Anemone. Rockbridge, 1253, (G, Va); Nelson, 1279, (G, Va), 1310, (G, Va).

- AQUILEGIA CANADENSIS* L. Columbine. Rockbridge, 1749, (G, Va).  
*AQUILEGIA CANADENSIS* L. var. *COCCINEA* (Small) Munz. Bedford, 855; Nelson, 916.  
*CALTHA PALUSTRIS* L. Marsh Marigold. Amherst, 940; Nelson, 250A; Augusta, 250, 251.  
*CIMICIFUGA AMERICANA* Michx. American Bugbane. Bedford, 258; Nelson 259, 1876, (G, Va).  
*CIMICIFUGA RACEMOSA*. (L.) Nutt. Black Cohosh. Bedford, 1619, (G, Va); Rockbridge, 260; Nelson, 918, 957.  
*CLEMATIS VERTICILLARIS* DC. var. *CACUMINIS* Fernald (*Rhodora* 49: 219. 1947). Rock Clematis. Bedford, 1385, (G, Va).  
*CLEMATIS VIORNA* L. Leather-flower. Bedford, 243, 1620, (G, Va); Rockbridge, 1752, (G, Va).  
*HEPATIC A AMERICANA* (DC.) Ker. Hepatica. Rockbridge, 1258, (G, Va); Amherst, 1230, (Va).  
*RANUNCULUS ABORTIVUS* L. Small-flowered Crowfoot. Bedford, 1373, (G, Va).  
*RANUNCULUS HISPIDUS* Michx. Hispid Buttercup. Rockbridge, 1256, (G, Va).  
*THALICTRUM CORIACEUM* (Britt.) Small. Thick-leaved Meadow-rue. Bedford, 234; Botetourt, 1737, (G, Va); Amherst, 1811, (G, Va).  
*THALICTRUM DIOICUM* L. Early Meadow-rue. Bedford, 1378, (G, Va); Nelson, 874, 1324, (G, Va).  
*THALICTRUM POLYGAMUM* Muhl. ex Spreng. Tall Meadow-rue. Bedford, 1696, (G, Va); Nelson, 873.  
*THALICTRUM REVOLUTUM* DC. Waxy Meadow-rue. Botetourt, 1507, (G, Va); Augusta, 912.  
*TRAUTVETTERIA CAROLINENSIS* (Walt.) Vail. False Bugbane. Bedford, 233.

#### BERBERIDACEAE—Barberry Family

- CAULOPHYLLUM THALICTROIDES* (L.) Michx. Blue Cohosh. Bedford, 1377, (G, Va); Botetourt, 274; Rockbridge, 273; Amherst, 1938; Nelson, 275, 1293, (G, Va); Augusta, 1951.  
*PODOPHYLLUM PELTATUM* L. May Apple. Botetourt, 1514, (G, Va).

#### MAGNOLIACEAE—Magnolia Family

- LIRIODENDRON TULIPIFERA* L. Tulip Tree. Bedford, 1547, (Va); Rockbridge, 1546, (G, Va); Amherst, 1825, (G, Va).  
*MAGNOLIA ACUMINATA* L. Cucumber Tree. Botetourt, 265, 1491, (G, Va); Amherst, 1822, (G, Va).  
*MAGNOLIA TRIPETALA* L. Umbrella Tree. Bedford, 1841, (G, Va).

## ANONACEAE—Custard Apple Family

ASIMINA TRILOBA Dunal. Common Pawpaw. Bedford, 1216, 1919; Rockbridge, 1351, (G, Va); Nelson, 1855, (G, Va).

## MENISPERMACEAE—Moonseed Family

MENISPERMUM CANADENSE L. Moonseed. Bedford, 267, 269, 270; Rockbridge, 1555, (G, Va); Nelson, 1856, (G, Va).

## LAURACEAE—Laurel Family

LINDERA BENZOIN (L.) Blume (*Benzoin aestivale* (L.) Nees) Spice Bush. Bedford, 1470, (G, Va); Rockbridge, 1261, (Va); Amherst, 1236, (G, Va); Nelson 1290, (G, Va).

SASSAFRAS ALBIDUM (Nutt) Nees (*S variifolium* Salisb.) Ktze.) Sassafras. Bedford, 1698, (G, Va); Botetourt, 1578, (G, Va); Rockbridge, 1525, (G, Va).

## PAPAVERACEAE—Poppy Family

CHELIDONIUM MAJUS L. Celandine. Rockbridge, 1349, (G, Va).

PAPAVER DUBIUM L. Poppy. Amherst, 1391, (G, Va).

SANGUINARIA CANADENSIS L. var. ROTUNDIFOLIA (Green) Fern. Blood Root. Bedford, 1376, (G, Va); Rockbridge, 1257, (G, Va); Amherst, 1232, (G, Va); Nelson, 1276, (G, Va); Augusta, 1399, (G, Va).

## FUMARIACEAE—Fumitory Family

CORYDALIS FLAVULA (Raf.) DC. Yellow Corydalis. Nelson, 1287, (G, Va), 1322, (G, Va).

CORYDALIS SEMPERVIRENS (L.) Pers. Pale Corydalis. Bedford, 1743, (G, Va); Botetourt, 281; Nelson, 284.

DICENTRA CUCULLARIA (L.) Bernh. Dutchman's Breeches. Botetourt, 277; Nelson, 1289, (G, Va), 1314.

DICENTRA EXIMIA (Ker) Torr. Wild Bleeding Heart. Bedford, 278, 1384, (G, Va); Amherst, 279; Nelson, 280; Augusta, 1429, (G, Va).

## CRUCIFERAE—Mustard Family

ALLIARIA OFFICINALIS Andrz. Garlic Mustard. Bedford, 1341, (G, Va).

ARABIS CANADENSIS L. Sickle Pod. Bedford, 278, Nelson, 915.

ARABIS LAEVIGATA (Muhl.) Poir. Rock Cress. Bedford, 296; Amherst, 297, 1392, (G, Va); Nelson, 1283, (G, Va), 1313, (Va); Augusta, 1426.

CARDAMINE PENNSYLVANICA Muhl. Bitter Cress. Bedford, 1473, (G, Va).

DENTARIA HETEROPHYLLA Nutt. Slender Toothwort. Nelson, 1319, (G, Va).

DENTARIA LACINIATA Muhl. Cut-leaved Toothwort. Bedford, 1371, (G, Va); Botetourt, 291, 1208; Amherst, 292, 1231, (Va); Nelson,

1273, (G, Va), 1321, (Va).

*DRABA RAMOSISSIMA* Desv. Branching Whitlow-grass. Bedford, 854; Nelson, 884; Augusta, 1410, (G, Va).

*DRABA VERNALIS* L. Vernal Whitlow-grass. Rockbridge, 1265, (G, Va).

*HESPERIS MATRONALIS* L. Dame's Rocket. Nelson, 1101.

*THLASPI ARVENSE* L. Field Penny-cress. Bedford, 1218, (G, Va); Amherst, 1247, (G, Va).

#### DROSERACEAE—Sundew Family

*DROSEROTA ROTUNDFOLIA* L. Round-leaved Sundew. Augusta, 300, 301.

#### CRASSULACEAE—Orpine Family

*PENTHORUM SEDOIDES* L. Ditch Stonecrop. Amherst, 302.

*SEDUM GLAUCOPHYLLUM* Clausen (*S. Nevii* Gray) Glaucous-leaved Stonecrop. Bedford, 304; Rockbridge, 1360, (G, Va); Nelson, 1323, (G, Va); Augusta, 1402, (G, Va).

*SEDUM TELEPHIODES* Michx. American Orpine. Botetourt, 306; Rockbridge, 1802, (G, Va); Amherst, 305; Nelson, 865.

*SEDUM TERNATUM* Michx. Wild Stonecrop. Bedford, 303; Botetourt, 1199, (G, Va); Nelson, 968.

#### SAXIFRAGACEAE—Saxifrage Family

*CHRYSOPLANIUM AMERICANUM* Schwein. Water Carpet. Bedford, 1771, (G, Va); Amherst, 1298, (G, Va); Nelson, 1875, (G, Va).

*HEUCHERA AMERICANA* L. var. *TYPICA* Rosendahl, Butters & Lakela, (*H. curtissii* T. & G.) Common Alum Root. Bedford, 1564, (G, Va, M); Amherst, 1798, (G, Va, M).

*HEUCHERA VILLOSA* Michx. var. *INTERMEDIA* Rosendahl, Butters & Lakela. Hairy Alum Root. Bedford, 1660, (G, Va, M); Rockbridge, 1851, (G, Va, M).

*HEUCHERA VILLOSA* Michx. var. *TYPICA* Rosendahl, Butters & Lakela. Botetourt, 318; Rockbridge, 319.

*HYDRANGAEA ARBORESCENS* L. Wild Hydrangea. Bedford, 1665, (G, Va); Botetourt, 327; Rockbridge, 1538, (G, Va).

*MITELLA DIPHYLLA* L. Bishop's Cap. Rockbridge, 1352, (G, Va); Nelson, 322.

*PARNASSIA ASARIFOLIA* Vent. Grass of Parnassus. Bedford, 323, 325; Augusta, 323A.

*RIBES ROTUNDFOLIUM* Michx. Wild Gooseberry. Bedford, 1381; Botetourt, 328.

*SAXIFRAGA MICHAUXII* Britt. (*S. leucanthemifolia* Michx.) Michaux's Saxifrage. Bedford, 307, 309; Rockbridge, 310; Amherst, 308.

*SAXIFRAGA MICRANTHIDIFOLIA* Haw. Lettuce Saxifrage. Bedford, 312,



313; Amherst, 311; Nelson, 899.

*SAXIFRAGA VIRGINIENSIS* Michx. Early Saxifrage. Bedford, 1386, (G, Va); Amherst, 1233, (Va); Nelson, 1280, (G, Va), 1316, (G, Va).

#### HAMAMELIDACEAE—Witch Hazel Family

*HAMAMELIS VIRGINIANA* L. Witch Hazel. Bedford, 1729, (G, Va); Botetourt, 1575, (G, Va).

#### ROSACEAE—Rose Family

*AGRIMONIA GRYPOSEPALA* Wallr. Agrimony. Bedford, 1722A, (G, Va).

*AMELANCHIER ARBOREA* (Michx. f.) Fern. Shadbush, Juneberry; Service or Sarvis Berry. Bedford, 1383, (G, Va), 1570, (G, Va); Botetourt, 1595, (G, Va); Rockbridge, 1529, (G, Va); Amherst, 1249, (G, Va); Nelson, 1272, (G, Va), 1335, (G, Va), 1953, 1961, 1962; Augusta, 1945.

*AMELANCHIER LAEVIS* Wieg. Shadbush. Bedford, 1379, (G, Va); Rockbridge, 1533, (G, Va), 1534, (G, Va).

*ARUNCUS DIOICUS* (Walt.) Fern. (*A. sylvester* Kosteletzky) Goat's-beard. Bedford, 336; Botetourt, 337; Rockbridge 1566, (G, Va); Augusta, 914.

*CRATAEGUS ROTUNDIFOLIA* Moench. Hawthorn. Bedford, 1722, (G, Va).

*GEUM CANADENSE* Jacq. White Avens. Bedford, 356.

*GEUM VIRGINIANUM* L. Cream-colored Avens. Bedford, 1720, (G, Va).

*GILLENIA TRIFOLIATA* (L.) Moench. Indian Physic. Bedford, 1466, (G, Va); Botetourt, 1490, (Va); Amherst, 338.

*PHYSOCARPUS OPULIFOLIUS* (L.) Maxim. Ninebark. Boutetourt, 330, 1741, (G, Va); Nelson, 893.

*POTENTILLA CANADENSIS* L. Dwarf Cinquefoil. Nelson, 1330, (G, Va).

*POTENTILLA NORVEGICA* L. var. *HIRSUTA* (Michx.) Lehm. Rough Cinquefoil. Bedford, 1663, (G, Va).

*POTENTILLA RECTA* L. Rough-fruited Cinquefoil. Bedford, 972.

*PRUNUS AMERICANA* Marsh. Wild Plum. Amherst, 362; Augusta, 1409, (G, Va).

*PRUNUS PENNSYLVANICA* L. Wild Bird, Fire or Pin Cherry. Rockbridge, 361, 1759, (G, Va); Nelson, 863, 1960.

*PRUNUS SEROTINA* Ehrh. Wild Black Cherry. Bedford, 1557, (G, Va); Nelson, 902.

*PRUNUS VIRGINIANA* L. Choke Cherry. Bedford, 1513, (G, Va); Botetourt, 360, 848; Rockbridge, 359.

*PYRUS AMERICANA* (Marsh.) DC. Mountain Ash. Bedford, 347; Botetourt, 344; Rockbridge, 345; Amherst, 346; Nelson, 872B.

*PYRUS FLORIBUNDA* Lindl. (*Aronia prunifolia* (Marsh.) Rehd.; *Pyrus*



- arbutifolia* var. *atropurpurea* (Britt.) Robins.) Purple-fruited Chokeberry. Bedford, 1477, (G, Va), 1478, (G, Va); Rockbridge, 1795, (G, Va); Amherst, 339; Augusta, 341, 983, 1093.
- PYRUS MELANOCARPA (Michx.) Willd. Black Chokeberry. Botetourt, 343; Amherst, 1797, (G, Va); Nelson, 1094.
- ROSA CAROLINA L. (*R. humilis* Marsh.) Pasture Rose. Bedford, 1561, (G, Va), 1658, (G, Va).
- ROSA PALUSTRIS Marsh. Swamp Rose. Bedford, 1622, (G, Va).
- RUBUS ALLEGHENIENSIS Porter. Blackberry. Bedford, 1467, (G, Va).
- RUBUS FLAGELLARIS Willd. (*R. villosus* Ait.) Dewberry. Bedford, 1690, (G, Va).
- RUBUS OCCIDENTALIS L. Black Raspberry. Botetourt, 1574, (G, Va).
- RUBUS ODORATUS L. Flowering Raspberry. Bedford, 1559, (G, Va); Botetourt, 1731, (G, Va).
- RUBUS PHOENICOLASIUS Maxim. Wineberry. Botetourt, 357.
- SPIRAEA CORYMBOSA Raf. Spiraea. Bedford, 1614, (G, Va), 1659, (G, Va); Botetourt, 331; Amherst, 332.
- SPIRAEA LATIFOLIA Borkh. American Meadowsweet. Bedford, 335, 1653, (G, Va); Botetourt, 1740, (G, Va); Amherst, 853.
- WALDSTEINIA FRAGARIOIDES (Michx.) Tratt. Barren Strawberry. Rockbridge, 354.

#### LEGUMINOSAE—Pea Family

- AMPHICARPA BRACTEATA (L.) Fern. (*A. monoica* (L.) Ell.) Hog-peanut. Amherst, 1819, (G, Va).
- APIOS AMERICANA Medic. (*A. tuberosa* Moench.) Ground-nut. Bedford, 386.
- ASTRAGALUS CANADENSIS L. Milk Vetch. Bedford, 1700, (G, Va), 1702; Botetourt, 374.
- BAPTISIA TINCTORIA (L.) Vent. var. CREBRA Fern. Yellow Wild Indigo. Bedford, 1613, (G, Va; Botetourt, 1585, (G, Va); Amherst, 367.
- CASSIA FASCICULATA Michx. (*C. chamaecrista* of authors, not L.) Partridge Pea. Bedford, 1842, (G, Va).
- CASSIA MARILANDICA L. Wild Senna. Nelson, 363.
- CASSIA NICTITANS L. Sensitive Pea. Bedford, 1843, (G, Va); Amherst, 364.
- CERCIS CANADENSIS L. Redbud. Bedford, 365; Amherst, 366; Nelson, 1337, (G, Va).
- CLITORIA MARIANA L. Butterfly Pea. Bedford, 388, 1686, (G, Va).
- DESMODIUM ROTUNDIFOLIUM (Michx.) DC. Prostrate Tick-Trefoil. Amherst, 377.

- LATHYRUS VENOSUS Muhl. Wild Sweetpea. Bedford, 1517, (G, Va); Rockbridge, 384; Nelson, 965; Augusta, 383.
- LESPEDEZA HIRTA (L.) Hornem. var. TYPICA Schindl. Hairy Bush-clover. Amherst, 379.
- LESPEDEZA INTERMEDIA (Wats.) Britt. (*L. frutescens* of authors) Wand-like Bush-clover. Amherst, 378.
- LUPINUS PERENNIS L. Wild Lupine. Bedford, 910, 1342, (G, Va).
- ROBINIA PSEUDO-ACACIA L. Black Locust. Bedford, 1657, (Va); Botetourt, 1497, (G, Va); Rockbridge, 1523, (G, Va).
- ROBINIA VISCOSA Vent. Clammy Locust. Rockbridge, 1393, (G, Va); Amherst, 373, 909.
- STYLOSANTHES RIPARIA Kearney. Decumbent Pencil-flower. Augusta, 980.
- TEPHROSIA VIRGINIANA (L.) Pers. Goat's Rue. Bedford, 1617, (G, Va); Botetourt, 1510, (G, Va).
- THERMOPSIS MOLLIS (Michx.) M. A. Curtis. Alleghany Thermopsis. Rockbridge, 1348, (G, Va).
- VICIA CAROLINIANA Walt. Carolina Vetch. Amherst, 382, 1252, (G, Va); Augusta, 1408, (G, Va).

#### LINACEAE—Flax Family

- LINUM VIRGINIANUM L. Yellow Flax. Amherst, 390.

#### OXALIDACEAE—Wood Sorrel Family

- OXALIS VIOLACEA L. Violet Wood-sorrel. Amherst, 393.

#### GERANIACEAE—Geranium Family

- GERANIUM MACULATUM L. Wild Geranium. Bedford, 1365, (G, Va); Amherst, 394; Nelson, 1317, 1327, (G, Va); Augusta, 1407, (Va).

#### RUTACEAE—Rue Family

- RUTA GRAVEOLENS L. Common Rue. Bedford, 396, 397. (This station probably the one mentioned in Gray's Manual, 7th edition. Now apparently destroyed by road construction.)

#### SIMARUBACEAE—Quassia Family

- AILANTHUS ALTISSIMA (Mill.) Swingle (*A. glandulosa* Desf.) Tree-of-heaven. Botetourt, 1684, (G, Va).

#### POLYGALACEAE—Milkwort Family

- POLYGALA INCARNATA L. Pink Milkwort, Augusta, 1097.
- POLYGALA PAUCIFOLIA Willd. Fringed Milkwort; Flowering Winter-green. Bedford, 944; Amherst, 398; Augusta, 1396, (G, Va).
- POLYGALA SANGUINEA L. Field Milkwort. Augusta, 979.

#### EUPHORBIACEAE—Spurge Family

- ACALYPHA GRACILIENS Gray. Slender Three-seeded Mercury. Bedford,

405.

ACALYPHA RHOMBOIDEA Raf. (*A. virginica* of authors, not L.) Three-seeded Mercury. Rockbridge, 404.

EUPHORBIA COROLLATA L. Flowering Spurge. Bedford, 406.

EUPHORBIA LATHYRUS L. Caper Spurge; Mole Plant. Bedford, 407.

#### CALLITRICHACEAE—Water Starwort Family

CALLITRICHE HETEROPHYLLA Pursh. Water Starwort. Bedford, 1918.

#### ANACARDIACEAE—Sumac Family

RHUS COPALLINA L. Dwarf Sumac. Bedford, 410.

RHUS GLABRA L. Smooth Sumac. Bedford, 1674, (G, Va).

RHUS TYPHINA L. Staghorn Sumac. Bedford, 409, 1485, (G, Va); Botetourt, 1636, (Va); Nelson, 903.

#### AQUIFOLIACEAE—Holly Family

ILEX MONTANA (T. & G.) Gray (*Ilex monticola* Gray.) Mountain Holly. Bedford, 1655, (G, Va); Botetourt, 414, 415; Rockbridge, 413; Nelson, 859.

ILEX VERTICILLATA (L.) Gray. Winterberry. Botetourt, 1573, (G, Va); Nelson, 416.

#### CELASTRACEAE—Staff Tree Family

CELASTRUS SCANDENS L. Bittersweet. Bedford, 418.

EUONYMUS AMERICANUS L. Strawberry Bush. Amherst, 417.

#### STAPHYLEACEAE—Bladder-nut Family

STAPHYLEA TRIFOLIA L. Bladder-nut. Rockbridge, 1362, (G, Va).

#### ACERACEAE—Maple Family

ACER NEGUNDO L. Box Elder; Ash-leaved Maple. Bedford, 426, 1640, (Va), 1683, (G, Va).

ACER PENNSYLVANICA L. Striped Maple; Moosewood. Botetourt, 1599, (G, Va), 1730, (Va); Rockbridge, 424, 425; Nelson, 423; Augusta, 1422, (G, Va).

ACER RUBRUM L. Red Maple. Botetourt, 1581, (G, Va); Rockbridge, 1544, (G, Va); Amherst, 1824, (G, Va); Nelson, 1871, (G, Va).

ACER RUBRUM L. var. TRIBOLUM K. Koch. Bedford, 1558, (G, Va).

ACER SACCHARUM Marsh. Sugar Maple. Bedford, 1714, (G, Va); Botetourt, 1905, (G, Va); Rockbridge, 1836, (G, Va); Amherst, 1821, (G, Va); Nelson, 1862, (G, Va), 1870, (G, Va).

ACER SPICATUM Lam. Mountain Maple. Bedford, 1556, (G, Va); Botetourt, 427, 428; Rockbridge, 1805, (G, Va); Amherst, 1806, (G, Va).

#### BALSAMINACEAE—Touch-me-not Family

IMPATIENS BIFLORA Walt. Touch-me-not. Bedford, 432.

IMPATIENS PALLIDA Nutt. Pale Touch-me-not. Bedford, 431.

#### RHAMNACEAE—Buckthorn Family

CEANOTHUS AMERICANUS L. New Jersey Tea. Bedford, 433, 1560, (G, Va); Botetourt, 1059.

#### VITACEAE—Grape Family

PARTHENOCISSUS QUINQUEFOLIA (L.) Planch. (*Psedera quinquefolia* (L.) Green). Virginia Creeper; Woodbine. Bedford, 1728, (Va); Botetourt, 1604, (G, Va); Rockbridge, 1541, (Va).

PARTHENOCISSUS QUINQUEFOLIA f. HIRSUTA (Donn) Fern. Bedford, 434.  
VITIS AESTIVALIS Michx. Wild Grape; Summer Grape. Bedford, 1501, (G, Va).

VITIS AESTIVALIS Michx. var. ARGENTIFOLIA (Munson) Fern. Botetourt, 1598, (G, Va).

VITIS VULPINA L. (*V. cordifolia* Michx.) Frost Grape. Bedford, 1621, (G, Va).

#### TILIACEAE—Linden Family

TILIA HETEROPHYLLA Vent. White Basswood. Bedford, 1656, (G, Va); Botetourt, 1631, (G, Va); Rockbridge, 441; Amherst, 438; Nelson, 440.

TILIA NEGLECTA Spach. Basswood. Botetourt, 442, 443, 1734, (Va); Nelson, 439.

#### MALVACEAE—Mallow Family

SIDA SPINOSA L. Indian Mallow. Bedford, 444.

#### HYPERICACEAE—St. John's-wort Family

HYPERICUM GENTIANOIDES (L.) BSP. Pine Weed. Bedford, 449; Botetourt, 1713, (Va).

HYPERICUM PROLIFICUM L. Shrubby St. John's-wort. Rockbridge, 948.

HYPERICUM PUNCTATUM Lam. Spotted St. John's-wort. Amherst, 447; Nelson, 875.

HYPERICUM VIRGINICUM L. Marsh St. John's-wort. Augusta, 947.

#### VIOLACEAE—Violet Family

HYBANTHUS CONCOLOR (Forster) Spreng. Green Violet. Botetourt, 1494, (G, Va); Rockbridge, 452, 453, 454.

VIOLA AFFINIS Le Conte. Le Conte's Violet. Botetourt, 459.

VIOLA BLANDA Willd. Sweet White Violet. Augusta, 1421, (G, Va).

VIOLA CANADENSIS L. Canada White Violet. Botetourt, 474; Rockbridge, 475, 476, 1537, (G).

VIOLA ERIOCARPA Schwein. (*V. scabriuscula* Schwein.) Smoothish Yellow Violet. Bedford, 1370, (G, Va); Rockbridge, 1943; Nelson, 473, 901, 1312, (G, Va); Augusta, 1948.

- VIOLA FIMBRIATULA* J. E. Sm. Ovate-leaved Violet. Rockbridge, 463; Nelson, 465, 1955.
- VIOLA HASTATA* Michx. Halberd-leaved Violet. Bedford, 945; Amherst, 470, 1237, (G, Va); Augusta, 1414, (G, Va).
- VIOLA KITAIBELIANA* R. & S. var. *RAFINESQUII* (Greene) Fern. (*V. rafinesquii* Greene.) Field Pansy. Amherst, 1266, (G, Va).
- VIOLA PALLENS* (Banks) Brainerd. Northern White Violet. Bedford, 1380, (G, Va, Patt).
- VIOLA PALMATA* L. Early Blue Violet, Bedford 1375, (G, Va), 1676, (G, Va); Amherst, 460.
- VIOLA PAPILIONACEA* Pursh. Meadow Blue Violet Bedford, 1366, (G, Va); Nelson, 1274, (G, Va), 1315, (G, Va).
- VIOLA PEDATA* L. Bird-foot Violet; Mountain Pansy. Amherst, 456; Nelson, 1956.
- VIOLA PEDATA* var. *LINEARILOBA* DC. Amherst, 457; Nelson, 1957; Augusta, 1416, (G, Va).
- VIOLA PRIMULIFOLIA* L. Primrose-leaved Violet. Augusta, 467.
- VIOLA PUBESCENS* Ait. Hairy Yellow Violet. Botetourt, 471; Amherst, 472.
- VIOLA ROTUNDIFOLIA* Michx. Round-leaved Yellow Violet. Bedford, 469; Nelson, 900, 1291, (G, Va).
- VIOLA SAGITTATA* Ait. Arrow-leaved Violet. Augusta, 466.

#### PASSIFLORACEAE—Passion-flower Family

- PASSIFLORA LUTEA* L. Yellow Passion-flower. Bedford, 479.

#### CACTACEAE—Cactus Family

- OPUNTIA VULGARIS* Mill. Prickly Pear Cactus. Nelson, 480, 1271, (G, Va).

#### LYTHRACEAE—Loosestrife Family

- CUPHEA PETIOLATA* (L.) Koehne. Clammy Cuphea. Nelson, 1880, (G, Va).
- DECODON VERTICILLATUS* (L.) Ell. Swamp Loosestrife. Augusta, 982.

#### ONAGRACEAE—Evening Primrose Family

- CIRCAEA ALPINA* L. Smaller Enchanter's Nightshade. Nelson, 1874, (G, Va).
- CIRCAEA CANADENSIS* Hill (*C. intermedia* Ehrh.) Enchanter's Nightshade. Bedford, 498; Botetourt, \*1638, (G, Va), 1899, (G, Va); Rockbridge, 1748, (G, Va).

\* ("The first I have seen from Virginia"—Fernald.)

- EPILOBIUM ANGUSTIFOLIUM* L. Fire-weed. Amherst, 487; Augusta, 1103.
- EPILOBIUM COLORATUM* Biehler. Purple-leaved Willow-herb. Bedford,



489; Rockbridge, 488, 490.

*GAURA BIENNIS* L. Biennial Gaura, Bedford, 1844, (G, Va).

*LUDWIGIA ALTERNIFOLIA* L. Seed-box. Bedford, 485.

*OENOTHERA BIENNIS* L. Evening Primrose. Bedford, 1662, (Va).

*OENOTHERA FRUTICOSA* L. Sundrops. Rockbridge, 1756, (G, Va).

*OENOTHERA GLAUCA* Michx. Glauous Sundrops. Bedford, 493, 494; Botetourt, 493A, 1594, (G, Va); Augusta, 962.

#### HALORAGIDACEAE—Water Milfoil Family

*MYRIOPHYLLUM HETEROPHYLLUM* Michx. Water Milfoil. Augusta, 500.

#### ARALIACEAE—Ginseng Family

*ARALIA NUDICAULIS* L. Wild Sarsaparilla. Botetourt, 1593, (G, Va); Rockbridge, 506; Augusta, 1412, (G, Va).

*ARALIA RACEMOSA* L. American Spikenard. Botetourt, 504; Rockbridge, 503.

*ARALIA SPINOSA* L. Hercules' Club. Bedford, 501.

*PANAX QUINQUEFOLIUM* L. Ginseng. Rockbridge; specimen in my collection obtained by resident "sang" hunters, through aid of Warden J. W. Luck of National Parks Service; Amherst, 1940.

#### UMBELLIFERAE—Carrot Family

*ANGELICA VENENOSA* (Greenway) Fern. (*A. villosa* (Walt.) BSP.) Hairy Angelica. Rockbridge, 539.

*CICUTA MACULATA* L. Water Hemlock. Bedford, 512.

*CRYPTOTAENIA CANADENSIS* (L.) DC. Honewort. Botetourt, 513.

*HERACLEUM MAXIMUM* Bartr. (*H. lanatum* Michx.) Cow Parsnip. Rockbridge, 1813, (G, Va); Nelson, 905.

*LIGUSTICUM CANADENSE* (L.) Britt. Botetourt, 524.

*OSMORHIZA CLAYTONI* Clarke in Hook f. Sweet Cicely. Botetourt, 510.

*OSMORHIZA LONGISTYLIS* (Torr.) DC. Botetourt, 511.

*OXYPOLIS RIGIDIOR* (L.) Coult. & Rose. Water Dropwort. Amherst, 537.

*PSEUDOTAENIDIA MONTANA* Mack. Virginia Mountain Pimpernel. Bedford, 532, 533; Botetourt, 529, 530; Rockbridge, 534; Amherst, 531.

*SANICULA MARILANDICA* L. Black Snakeroot. Bedford, 509; Botetourt, 508.

*TAENIDIA INTEGERRIMA* (L.) Drude. Yellow Pimpernel. Botetourt, 520, 522; Amherst, 519; Rockbridge, 521; Nelson, 871.

*THASPIUM BARBINODE* (Michx.) Nutt. Hairy-jointed Meadow Parsnip. Bedford, 526; Botetourt, 525, 528; Amherst, 527; Augusta, 1403, (G, Va).

*ZIZIA APTERA* (Gray) Fern. (*Zizia cordata* (Walt.) DC.) Heart-leaved Alexanders. Botetourt, 515, 516; Amherst, 517, 518; Nelson, 1332.



(G, Va); Augusta, 1394, (G, Va).

#### CORNACEAE—Dogwood Family

*CORNUS ALTERNIFOLIA* L. f. Alternate-leaved Dogwood. Bedford, 546, 547; Botetourt, 1492, (G, Va); Rockbridge, 1551, (Va); Amherst, 545; Nelson, 896.

*CORNUS AMOMUM* Mill. Swamp Dogwood; Kinnikinnik. Bedford, 1484, (G, Va).

*CORNUS FLORIDA* L. Flowering Dogwood. Bedford, 1549, (Va); Botetourt, 1572, (G, Va); Rockbridge, 1553, (Va); Amherst, 541; Nelson, 1952; Augusta, 1947.

*CORNUS RACEMOSA* Lam. (*C. paniculata* L'Her.) Bedford, 544; Nelson, 1100.

*CORNUS STRICTA* Lam. Stiff Cornel. Botetourt, 543; Amherst, 542.

*NYSSA SYLVATICA* Marsh. Black Gum, Botetourt, 1582, (G, Va); Rockbridge, 1524, (G, Va).

#### ERICACEAE—Heath Family

*CHIMAPHILA MACULATA* (L.) Pursh. Spotted Wintergreen; Rat's-bane. Bedford, 1764, (G, Va); Botetourt, 1635, (G, Va); Rockbridge, 1255, (G, Va).

*EPIGAEA REPENS* L. Trailing Arbutus. Bedford, 1223, (G, Va); Amherst, 573, 574, 1224, (G, Va).

*EPIGAEA REPENS* L. var. *GLABRIFOLIA* Fern. Botetourt, 1200, (G, Va); Augusta, 1424, (G, Va).

*GAULTHERIA PROCUMBENS* L. Wintergreen; Teaberry. Botetourt, 1205, (G, Va); Amherst, 1241, (Va); Nelson, 1958; Augusta, 1417, (Va).

*GAYLUSSACIA BACCATA* Wang.) K. Koch. Huckleberry. Botetourt, 1580, (G, Va); Rockbridge, 577; Amherst, 576, 1801.

*GAYLUSSACIA FRONDOSA* (L.) T. & G. Dangleberry. Amherst, 575; Augusta, 969.

*KALMIA LATIFOLIA* L. Mountain Laurel. Bedford, 1147, (G, Va); Botetourt, 1148, (G, Va); Rockbridge, 1159, (Va); Amherst, 1163, (Va); Nelson, 1170, (Va); Augusta, 1173, (Va).

*LYONIA LIGUSTRINA* (L.) DC. Male Berry. Bedford, 1483, (G, Va); Botetourt, 571; Amherst, 569.

*MENZIESIA PILOSA* (Michx.) Pers. Minnie Bush. Botetourt, 1498, (G, Va); Rockbridge, 563.

*MONOTROPA UNIFLORA* L. Indian Pipe. Bedford, 1763, (G, Va).

*OXYDENDRUM ARBOREUM* (L.) DC. Sourwood. Botetourt, 1606, (Va).

*PIERIS FLORIBUNDA* (Pursh) Benth. & Hook. (*Andromeda floribunda* Pursh). Mountain Fetter-bush. Bedford, 568; Rockbridge, 1535,

- (G, Va); Amherst, 567.
- PYROLA ROTUNDIFOLIA* L. var. *AMERICANA* (Sweet) Fern. Shin Leaf. Bedford, 555; Botetourt, 1586, (G, Va); Nelson, 870.
- RHODODENDRON CALENDULACEUM* (Michx.) Torr. Flame Azalea. Botetourt, 1500, (G, Va).
- RHODODENDRON CATAWBIENSE* Michx. Rhododendron. Bedford, 560, 1134, (Va); Botetourt, 562, 1150, (G, Va); Rockbridge, 1157, (Va); Amherst, 561, 1187, (G, Va); Nelson, 1183, (G, Va); Augusta, 1181, (Va).
- RHODODENDRON NUDIFLORUM* (L.) Torr. Pink Azalea. Bedford, 1480, (G, Va); Amherst, 556; Augusta, 557, 1404, (G, Va).
- RHODODENDRON ROSEUM* (Loisel.) Rehder (*R. nudiflorum* var. *roseum* (Loisel.) Weig.) Rose Azalea. Bedford, 1921; Botetourt, 1499, (G, Va); Rockbridge, 558.
- VACCINIUM ANGUSTIFOLIUM* Ait. Augusta, 970.
- VACCINIUM ARBOREUM* Marsh. Farkleberry. Augusta, 579.
- VACCINIUM ATROCOCCEUM* (Gray) Heller. Black Blueberry. Augusta, 586.
- VACCINIUM CAESIUM* Greene. Botetourt, 579A.
- VACCINIUM ERYTHROCARPUM* Michx. Southern Mountain Cranberry. Bedford, 971; Botetourt, 587.
- VACCINIUM LAMARCKII* Camp (*V. pennsylvanicum* Lam.) Low Sweet Blueberry. Botetourt, 1591, (G, Va); Amherst, 582; Augusta, 1418, (G, Va).
- POLYCODIUM MELANOCARPUM* (C. Mohr) Small (*Vaccinium melanocarpum* Mohr) Southern Gooseberry. Botetourt, 581.
- POLYCODIUM STAMINEUM* (L.) Greene. Deerberry. Botetourt, 1590, (Va); Augusta, 1419, (G, Va).

#### DIAPENSIACEAE—Diapensia Family

- GALAX APHYLLA* L. Galax. Botetourt, 589, 1198, (G, Va); Amherst, 591.

#### PRIMULACEAE—Primrose Family

- LYSIMACHIA QUADRIFOLIA* L. Whorled Loosestrife. Bedford, 593; Botetourt, 1504, (G, Va).
- TRIENTALIS BOREALIS* Raf. (*T. americana* (Pers.) Pursh). American Star Flower. Rockbridge, 597.

#### OLEACEAE—Olive Family

- CHIONANTHUS VIRGINICUS* L. Fringe Tree. Augusta, 958.
- FRAXINUS AMERICANA* L. White Ash. Botetourt, 1639, (G, Va).
- FRAXINUS PENNSYLVANICA* Marsh. Red Ash. Bedford, 598.
- FRAXINUS PENNSYLVANICA* Marsh. var. *SUBINTEGERRIMA* (Vahl) Fern. (*F. p.* var. *lanceolata* (Borkh.) Sarg.) Bedford, 1719, (G, Va).

## GENTIANACEAE—Gentian Family

*GENTIANA ANDREWSII* Griseb. Closed Gentian. Rockbridge, 600; Amherst, 603; Nelson, 601, 602.

*GENTIANA QUINQUEFOLIA* L. Stiff Gentian. Botetourt, 1902, (G, Va); Rockbridge, 599; Nelson, 599A.

*OBOLARIA VIRGINICA* L. Pennywort. Nelson, 1064.

*SABATIA ANGULARIS* (L.) Pursh. Rose-pink. Rockbridge, 981.

## APOCYNACEAE—Dogbane Family

*APOCYNUM ANDROSAEMIFOLIUM* L. Spreading Dogbane. Bedford, 605; Botetourt, 604.

## ASCLEPIADACEAE—Milkweed Family

*ASCLEPIAS AMPLEXICAULIS* J. E. Smith. Blunt-leaved Milkweed. Bedford, 609.

*ASCLEPIAS INCARNATA* L. var. *PULCHRA* (Ehrh.) Pers. Swamp Milkweed. Bedford, 608.

*ASCLEPIAS PHYTOLACCOIDES* Pursh. Poke Milkweed. Bedford, 610; Nelson, 894.

*ASCLEPIAS SYRIACA* L. Common Milkweed. Nelson, 860.

*ASCLEPIAS TUBEROSA* L. Butterfly-weed. Nelson, 917.

*ASCLEPIAS VARIEGATA* L. White Milkweed. Bedford, 611, 1568.

*GONOLOBUS CAROLINENSIS* (Jacq.) Schultes. Bedford, 619.

*GONOLOBUS OBLIQUUS* (Jacq.) Schultes. Bedford, 618; Nelson, 1857, (G)

*VINCETOXICUM GONOCARPOS* Walt. Large-leaved Angle-pod. Nelson, 919.

## CONVOLVULACEAE—Morning Glory Family

*CONVOLVULUS PURSHIANUS* Wherry. Pursh's Convolvulus. Botetourt, 621.

*CONVOLVULUS SEPIUM* L. var. *COMMUNIS* Tryon. Hedge Bindweed. Bedford, 1716, (G, Va); Rockbridge, 622.

*IPOMOEA PANDURATA* (L.) G. F. W. Meyer. Wild Potato-vine; Man-of-the-Earth. Bedford, 1685, (G, Va).

## POLEMONIACEAE—Phlox Family

*PHLOX DIVARICATA* var. *CANADENSIS* (Sweet) Wherry. Wild Blue Phlox. Bedford, 1343, (G, Va).

*PHLOX SUBULATA* L. var. *AUSTRALIS* Wherry. Moss Pink. Augusta, 1413, (G, Va).

*PHLOX SUBULATA* L. var. *BRITTONII* (Small) Wherry. Moss Pink. Amherst, 841, 842, 852.

## HYDROPHYLLACEAE—Waterleaf Family

*HYDROPHYLLUM VIRGINIANUM* L. Waterleaf. Bedford, 624; Botetourt, 623, 625, 1493, (G).

**PHACELIA DUBIA** (L.) Trel. Phacelia. Bedford, 1345, (G, Va); Amherst, 626; Nelson, 627.

**BORAGINACEAE—Borage Family**

**ECHIUUM VULGARE** L. Viper's Bugloss; Blue Thistle. Bedford, 632; Botetourt, 1630, (G, Va).

**HACKELIA VIRGINIANA** (L.) Johnston (*Lappula virginiana* (L.) Greene). Beggar's-lice. Rockbridge, 628.

**LITHOSPERMUM ARVENSE** L. Corn Gromwell. Amherst, 1250, (G, Va).

**MERTENSIA VIRGINICA** (L.) DC. Bluebells; Smooth Lungwort; Virginia Cowslip. Botetourt, 630; Rockbridge, 1350.

**MYOSOTIS LAXA** Lehm. Forget-me-not. Augusta, 926.

**LABIATAE—Mint Family**

**AGASTACHE NEPETOIDES** (L.) Ktze. Catnip Giant-Hyssop. Bedford, 639; Amherst, 1812, (G).

**AGASTACHE SCROPHULARIAEFOLIA** (Willd.) Ktze. Figwort Giant-Hyssop. Rockbridge, 1757, (G, Va).

**COLLINSONIA CANADENSIS** L. Horse-balm. Rockbridge, 1786, (G, Va).

**CUNILA ORIGANOIDES** (L.) Britt. Dittany. Amherst, 658.

**HEDEOMA PULEGIOIDES** (L.) Pers. False Pennyroyal. Nelson, 1860, (G, Va).

**LAMIUM AMPLEXICAULE** L. Henbit. Nelson, 1288, (G, Va).

**LEONURUS CARDIACA** L. Motherwort. Bedford, 642.

**LYCOPUS RUBELLUS** Moench. Water Horehound. Amherst, 660.

**LYCOPUS VIRGINICUS** L. Bugle Weed. Bedford, 1770, (G, Va).

**MARRUBIUM VULGARE** L. Horehound. Bedford, 638.

**MENTHA PIPERITA** L. Peppermint. Bedford 662.

**MENTHA SPICATA** L. Spearmint. Bedford, 661.

**MONARDA CLINOPODIA** L. Basil Balm. Bedford, 1701, (G, Va); Botetourt, 647.

**NEPETA CATARIA** L. Catnip. Bedford, 641, 1689, (G, Va).

**PERILLA FRUTESCENS** (L.) Britt. Beefsteak Plant. Nelson, 664.

**PYCNANTHEMUM INCANUM** (L.) Michx. Mountain Mint. Bedford, 1675, (G, Va); Amherst, 657.

**SATUREJA NEPETA** (L.) Scheele. Basil Thyme. Amherst, 652.

**SCUTELLARIA OVATA** Hill var. **VERSICOLOR** (Nutt.) Fern. Heart-leaved Skullcap. Bedford, 1761, 1853, (G, Va); Amherst, 1760, (G, Va).

**SCUTELLARIA SAXATILIS** Ridd. Rock Skullcap. Bedford, 1736, (G, Va), 1774; Botetourt, 636.

**SCUTELLARIA FERRATA** Andr. Showy Skullcap. Amherst, 1520, (G, Va).

**STACHYS TENUIFOLIA** Willd. Smooth Hedge Nettle. Bedford, 1661,

(G, Va); Nelson, 906.

STACHYS TENUIFOLIA Willd. var. ASPERA (Michx.) Fern. Amherst, 643; Rockbridge, 644.

TEUCRIUM CANADENSE L. American Germander; Wood Sage. Nelson, 920.

TRICHOSTEMA DICHOTOMUM L. Bastard Pennyroyal. Nelson, 1869, (G, Va).

#### SCROPHULARIACEAE—Figwort Family

AUREOLARIA FLAVA (L.) Farw. var. MACRANTHA Pennell (*Gerardia flava* L.) Smooth False Foxglove. Bedford, 1769, (G, Phil.) (1769, *Gerardia laevigata* Raf., sensu Fernald.)

AUREOLARIA FLAVA (L.) Farw. var. TYPICA Pennell (*Gerardia flava* L.) Bedford, 1679, (G, Va); Nelson, 898.

AUREOLARIA LAEVIGATA (Raf.) Raf. (*Gerardia laevigata* Raf.) Entire-leaved False Foxglove. Amherst, 1781, (G, Va, Phil); Nelson, 1863, (G, Phil). (1781 and 1863, *Gerardia flava* L., sensu Fernald.)

AUREOLARIA PEDICULARIA (L.) Raf. (*Gerardia pedicularia* L.) Fern-leaved or Lousewort False Foxglove. Bedford, 1849, (G, Va, Phil); Amherst, 684.

CHELONE GLABRA var. ELATIOR Raf. Turtle-head. Bedford, 678; Amherst, 675, Nelson, 1878, (G, Va, Phil).

MELAMPYRUM LINEARE Desf. var. AMERICANUM (Michx.) Beauverd Cow-wheat. Bedford, 690.

MIMULUS RINGENS L. Monkey-flower. Amherst, 679.

PEDICULARIS CANADENSIS L. Lousewort; Wood Betony. Bedford, 1363, (G, Va); Rockbridge, 691; Amherst, 692; Augusta, 1946.

PENSTEMON CANESCENS (Britt.) Britt. Gray Beard-tongue. Bedford, 670; Botetourt, 1503, (G), 1629, (G, Va, Phil); Amherst, 671; Nelson, 966; Augusta, 923.

PENSTEMON PALLIDUS Small. Pale Beard-tongue. Nelson, 967.

SCROPHULARIA LANCEOLATA Pursh (*S. leporella* Bickn.) Hare Figwort. Bedford, 669; Botetourt, 1505, (G, Va).

VERBASCUM PHLOMOIDES L. Claspingleaved Mullein. Bedford, 665A, 1536, (G, Va).

VERONICA AMERICANA Schwein. American Brooklime. Bedford, 681, 1474, (G, Va); Botetourt, 1623, (G, Va); Amherst, 682.

VERONICA PERSICA Poir. (*V. tournefortii* Gmel.) Bedford, 1344, (G, Va).

#### OROBANCHACEAE—Broom-rape Family

CONOPHOLIS AMERICANA (L.) Wallr. Squaw-root; Cancer-root. Bed-



ford, 1369, (G, Va).

EPIFAGUS VIRGINANA (L.) Bart. Beechdrops. Bedford, 1933.

OROBANCHE UNIFLORA L. One-flowered Broom-rape. Augusta, 1420, (G, Va).

#### BIGNONIACEAE—Bignonia Family

PAULOWNIA TOMENTOSA (Thunb.) Baill. Paulownia. Botetourt, 1627, (G, Va).

#### PHRYMACEAE—Lopseed Family

PHRYMA LEPTOSTACHYA L. Lopseed. Bedford, 1762, (Va); Botetourt, 1744, (G, Va).

#### RUBIACEAE—Madder Family

DIODIA TERES Walt. Buttonweed. Bedford, 705.

GALIAM LANCEOLATUM Torr. Wild Liquorice. Botetourt, 702.

GALIAM LATIFOLIUM Michx. Purple Bedstraw. Botetourt, 701, 1506.

GALIAM PILOSUM Ait. Hairy Bedstraw. Rockbridge, 700.

GALIAM TRIFLORUM Michx. Sweet-scented Bedstraw. Bedford, 703, 1563, (G, Va); Botetourt, 704.

HEDYOTIS CAERULEA (L.) Hook. (*Houstonia caerulea* L.) Bluets; Quaker Ladies. Amherst, 1238, (G, Va); Nelson, 1284, (G, Va); Augusta, 1401, (G, Va).

HEDYOTIS CANADENSIS (Willd.) Fosberg (*Houstonia longifolia* Gaertn.) Long-leaved Houstonia. Botetourt, 711.

HEDYOTIS NUTTALLIANA Fosberg (*Houstonia tenuifolia* Nutt.) Slender-leaved Houstonia. Bedford, 1680, (G, Va); Augusta, 710.

MITCHELLA REPENS L. Partridge Berry; Twin-flower. Botetourt, 1192, (G, Va), 1201, (Va); Amherst, 1188, (Va); Nelson, 1292, (G, Va); Augusta, 1398, (Va).

#### CAPRIFOLIACEAE—Honeysuckle Family

DIERVILLA LONICERA Mill. Bush Honeysuckle. Bedford, 1654, (G, Va); Botetourt, 713; Amherst, 712; Augusta, 964.

SAMBUCUS CANADENSIS L. American Elder. Botetourt, 1624, (G, Va).

SAMBUCUS PUBENS Michx. (*S. racemosa* L.) Red-berried Elder. Bedford, 732; Nelson, 904, 1297, (G, Va); Augusta, 1950.

SYMPHORICARPOS ORBICULATUS Moench. Coral-berry. Rockbridge, 1542, (G, Va).

TRIOSTEUM AURANTIACUM Bickn. Horse-gentian. Rockbridge, 717; Nelson, 716.

TRIOSTEUM PERFOLIATUM L. Horse-gentian. Bedford, 1767, (G, Va); Nelson, 714, 925.

VIBURNUM ACERIFOLIUM L. Maple-leaved Viburnum. Bedford, 1495,

(G, Va); Botetourt, 1603, (G, Va); Rockbridge, 1830, (G, Va); Amherst, 721; Nelson, 1839, (G, Va).

*VIBURNUM ALNIFOLIUM* Marsh. Hobble-bush; "Swamp Dogwood." Nelson, 719.

*VIBURNUM CASSINOIDES* L. Wild Raisin. Nelson, 1873, (G, Va); Augusta, 725, 973, 1092, 1095, 1095A.

*VIBURNUM NUDUM* L. Naked Withe-rod. Augusta, 1095B, 1095C, 1096.

*VIBURNUM PRUNIFOLIUM* L. Black Haw. Bedford, 729; Rockbridge, 1550, (G, Va); Amherst, 730, 731; Augusta, 1428, (G, Va).

*VIBURNUM RECOGNITUM* Fernal. (*Viburnum dentatum* L.) (Rhodora 43:647. 1941) Arrow-wood. Augusta, 722, 723, 988.

#### CAMPANULACEAE—Bellflower Family

*CAMPANULA AMERICANA* L. Tall Bellflower. Bedford, 1712, (G, Va). Amherst, 736.

*CAMPANULA DIVARICATA* Michx. Panicked Bellflower. Bedford, 737; Rockbridge, 1753, (G, Va).

#### LOBELIACEAE—Lobelia Family

*LOBELIA INFLATA* L. Indian Tobacco. Bedford, 746; Rockbridge, 1755, (G, Va).

*LOBELIA SIPHILITICA* L. Great Lobelia. Amherst, 742; Nelson, 741.

#### COMPOSITAE—Daisy Family

*ACTINOMERIS ALTERNIFOLIA* (L.) DC. Wing-stem; Yellow Iron Weed; "Stick-weed." Bedford, 815; Amherst, 1829, (G, Va).

*ANTENNARIA NEODIOICIA* Greene. Smaller Cat's foot. Rockbridge, 851.

*ANTENNARIA PLANTAGINIFOLIA* (L.) Richards. Plantain-leaved Everlasting; Pussy-toes; Indian Tobacco. Amherst, 1240, (Va); Nelson, 1285, (G, Va); Augusta, 1425, (G, Va).

*ASTER DIVARICATUS* L. White Wood Aster. Bedford, 783; Botetourt, 1891, (G, Va), 1898; Rockbridge, 1790, (G, Va), 1885, (G, Va); Amherst, 1780, (G, Va); Nelson, 1864, (G, Va).

*ASTER INFIRMUS* Michx. Cornel-leaved Aster. Rockbridge, 791; Amherst, 1784, (G, Va).

*ASTER LAEVIS* L. Smooth Aster. Nelson, 787.

*ASTER LINARIIFOLIUS* L. Stiff-leaved Aster. Nelson, 978.

*ASTER MACROPHYLLUS* L. var. *IANTHINUS* (Burgess) Fern. Violet Wood Aster. Bedford, 1848, (G, Va); Botetourt, 1888, (G, Va); Rockbridge, 1792, (G, Va), 1884, (G, Va); Amherst, 784, 1758, (G, Va); Nelson, 1837, (G, Va); Augusta, 1840, (G, Va).

*ASTER NOVI-BELGII* L. New York Aster. Bedford, 1895, (G, Va); Amherst, 788; Nelson, 1877, (G, Va).

- ASTER SCHREBERI Nees. Schreber's Aster. Bedford, 1735, (G, Va); Rockbridge, 1850, (G, Va).
- ASTER UMBELLATUS Mill. Tall Flat-top White Aster. Bedford, 1896, (G, Va).
- ASTER UNDULATUS L. Wavy-leaved Aster. Bedford, 1847, (G, Va), 1893, (G, Va), 1894, (G, Va); Amherst, 785.
- CACALIA ATRIPPLICIFOLIA L. Pale Indian Plantain. Bedford, 822.
- CACALIA MUHLENBERGII (Sch. Bip.) Fern. (*C. reniformis* Muhl.) Great Indian Plantain. Amherst, 821; Nelson, 820.
- CENTAUREA MACULOSA Lam. Spotted Knapweed. Rockbridge, 826.
- CHRYSOPSIS MARIANA (L.) Nutt. Golden Aster. Bedford, 766.
- COREOPSIS MAJOR Walt. Greater Tickseed. Bedford, 817, 1567, (G, Va); Botetourt, 1625, (G, Va).
- ERIGERON ANNUUS (L.) Pers. White-top. Botetourt, 1608, (G, Va).
- ERIGERON PULCHELLUS Michx. Robin's Plantain. Amherst, 793.
- ERIGERON STRIGOSUS Muhl. (*E. ramosus* (Walt.) BSP.) Daisy Fleabane. Botetourt, 1609, (G, Va).
- EUPATORIUM PERFOLIATUM L. Boneset. Amherst, 751, 1827, (G, Va).
- EUPATORIUM PURPUREUM L. Joe-Pye Weed. Bedford, 748; Rockbridge, 1787, (G, Va).
- EUPATORIUM RUGOSUM Hoult. (*E. urticaefolium* Reich.) White Snake-root. Bedford, 753; Amherst, 752.
- EUPATORIUM SESSILIFOLIUM L. Upland Boneset. Amherst, 750.
- GNAPHALIUM OBTUSIFOLIUM L. (*G. polycephalum* Michx.) Fragrant Life Everlasting. Bedford, 801.
- HELIANTHUS DECAPETALUS L. Wild Sunflower. Bedford, 1852, (G, Va); Rockbridge, 1835, (G, Va); Nelson, 1872, (G, Va).
- HELIANTHUS DIVARICATUS L. Woodland Sunflower. Bedford, 1692, (G, Va); Rockbridge, 814; Amherst, 1782, (G, Va).
- HELIANTHUS LAEVIGATUS T. & G. Smooth Sunflower. Bedford, 1846, (G, Va).
- HELIOPSIS HELIANTHOIDES (L.) Sweet. False Sunflower. Bedford, 1717, (G, Va); Rockbridge, 1833, (G, Va).
- HIERACIUM GREENII Porter & Britton. Green's Hawkweed. Bedford, 831.
- HIERACIUM PANICULATUM L. Panicked Hawkweed. Botetourt, 832.
- HIERACIUM PILOSELLA L. Mouse-ear Hawkweed. Bedford, 1766, (G, Va); Botetourt, 1626, (G, Va).
- HIERACIUM SCABRUM Michx. Rough Hawkweed. Amherst, 833.
- INULA HELENIUM L. Elecampane. Amherst, 803.
- LIATRIS GRAMINIFOLIA (Walt.) Willd. Blazing Star. Augusta, 987.

- LIATRIS GRAMINIFOLIA* (Walt.) Willd. var. *SMALLII* (Britt.) Fern. & Griscom. Rockbridge, 1799, (G, Va).
- LIATRIS TURGIDA* Gaiser (Rhodora 48:261. 1946) Nelson, 756.
- LIATRIS SCARIOSA* (L.) Willd. var. *VIRGINIANA* (Lunell) Gaiser. Large Button-Snakeroot. Amherst, 758.
- LIATRIS SPICATA* L. Gay Feather. Botetourt, 761; Rockbridge, 762; Nelson, 759.
- PARTHENIUM AURICULATUM* Britt. Auricled Parthenium. Bedford, 809.
- PARTHENIUM INTEGRIFOLIUM* L. American Fever-few. Botetourt, 1610, (G, Va), 1889, (G, Va); Amherst, 808.
- POLYMNIA CANADENSIS* L. Small-flowered Leaf-cup. Nelson, 804.
- POLYMNIA UVEDALIA* L. Large-flowered Leaf-cup. Bedford, 805.
- PRENANTHES ALBA* L. Rattlesnake-root. Nelson, 989.
- PRENANTHES ALTISSIMA* L. Tall White Lettuce. Bedford, 829.
- PRENANTHES ALTISSIMA* L. var. *HISPIDULA* Fern. Nelson, 858.
- PRENANTHES TRIFOLIOLATA* (Cass.) Fern. Tall Rattlesnake-root. Nelson, 990.
- RUBBECKIA HIRTA* L. Black Eyed Susan. Bedford, 1682, (G, Va).
- RUBBECKIA LACINIATA* L. Tall Cone-flower; Wild Golden Glow. Bedford, 812; Rockbridge, 1791; (G, Va); Nelson, 895.
- SENECIO ANTENNARIIFOLIUS* Britt. Cat's-paw Ragwort. Botetourt, 1210, (G, Va); Rockbridge, 825, 908, 1211, (G, Va).
- SENECIO AUREUS* L. Golden Ragwort. Bedford, 1389, (G, Va); Augusta, 924.
- SENECIO AUREUS* L. var. *INTERCURSUS* Fern. Bedford, 1475, (G, Va).
- SERICOCARPUS ASTEROIDES* (L.) BSP. Toothed White-topped Aster. Bedford, 1687, (G, Va); Amherst, 1783, (G, Va).
- SILPHIUM TRIFOLIATUM* L. Whorled Rosin-weed. Bedford, 1681, (G, Va).
- SOLIDAGO ALTISSIMA* L. Tall Goldenrod. Nelson, 1867, (G, Va, B).
- SOLIDAGO ARGUTA* Ait. Cut-leaved Goldenrod. Bedford, 773; Amherst, 772.
- SOLIDAGO BICOLOR* L. Silver-rod; White Goldenrod. Bedford, 770; Botetourt, 1892, (G, Va, B); Rockbridge, 1820, (G, Va, B); Amherst, 1788, (G, Va, B).
- SOLIDAGO CAESIA* L. (sensu Friesner); (*S. curtisii* T. & G. sensu Fernald). Blue-stemmed Goldenrod. Rockbridge, 1883, (G, Va, B).
- SOLIDAGO CURTISII* T. & G. Curtis' Goldenrod. Bedford, 1854, (G, B), 1906, (G, B); Rockbridge, 767, 769; Nelson, 768.
- SOLIDAGO ERECTA* Pursh. Slender Goldenrod. Nelson, 1838, (G, Va, B);

- (this number *S. speciosa* Nutt., sensu Fernald); 1868, (G, B).
- SOLIDAGO GIGANTEA Ait. var. LEIOPHYLLA Fern. (*S. serotina* Ait.) Late Goldenrod. Botetourt, 1900, (G, Va, B).
- SOLIDAGO GRAMINIFOLIA (L.) Salisb. Flat-topped Goldenrod. Amherst, 781.
- SOLIDAGO JUNCEA Ait. Early Goldenrod. Bedford, 774; Rockbridge, 1793, (G, Va, B).
- SOLIDAGO MONTICOLA T. & G. Mountain Goldenrod. Amherst, 771.
- SOLIDAGO NEMORALIS Ait. Field Goldenrod. Amherst, 780; Nelson, 1866, (G, Va, B).
- SOLIDAGO ODORA Ait. Anise-scented Goldenrod. Amherst, 775.
- SOLIDAGO ROANENSIS Porter var. MONTICOLA (T. & G.) Fernald. Amherst, 1818, (G, Va, B). (*S. monticola* T. & G. sensu Fernald.)
- SOLIDAGO RUGOSA Mill. Wrinkle-leaved Goldenrod. Amherst, 777.
- SOLIDAGO SQUARROSA Muhl. Stout Ragged Goldenrod. Botetourt, 1887, (G, Va, B), 1903, (G, Va, B).
- SOLIDAGO ULMIFOLIA Muhl. Amherst, 776; Botetourt, 1886, (G, Va, B). (The writer identified #1886 as *S. caesia* L.; Friesner says of it, "unusual leaves, suggesting *S. ulmifolia* Muhl. . . . possibly segregate of *S. ulmicea*". Fernald calls it *S. Curtisii* T. & G. var. *pubens* (M. A. Curtis) Gray.)
- SOLIDAGO ULIGINOSA Nutt., var. ULIGINOSA (Nutt.) Cronquist (*Rhodora* 49:73. 1947). (*S. uniligulata* (DC.) Porter var. *neglecta* (T. & G.) Fern.) Rockbridge, 1785, (G, Va, B). (*S. juncea* Ait., sensu Fernald; *S. uniligulata* (DC.) Porter var. *neglecta* (T. & G.) Fern., sensu Friesner.)
- VERNONIA NOVEBORACENSIS (L.) Willd. Ironweed. Amherst, 1826, (G, Va).

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LYNCHBURG COLLEGE  
LYNCHBURG, VIRGINIA

## Studies in Virginia Plants I.

List of Bryophytes from the Vicinity of Fredericksburg, Virginia<sup>1</sup>

H. H. ILLIS

This paper is a report on the occurrence of bryophytes in a section of northeastern Virginia and is based on some 400 specimens accumulated during the last few years in connection with extensive botanical field trips through parts of Spotsylvania, Caroline, King George, and Stafford Counties.

The identification of these bryophytes was handled largely by Alfred Clebsch, while Dr. A. LeRoy Andrews named the species of *Sphagnum*, and Drs. Lois Clark, A. W. Evans, Seville Flowers, Margaret Fullord, A. J. Sharp, Winona H. Welch, and Frances E. Wynne assisted in naming plants of other difficult groups. To these, and especially Dr. Paul M. Patterson, who carefully checked the determination of the mosses, and Mr. Kenneth A. Wagner, who did the same for the liverworts, I express my sincere thanks. Most of this work was done at the Department of Botany of the University of Tennessee.

One collection of each species has been deposited in the herbarium of the University of Tennessee. In addition to my own collection, almost complete sets are in the herbaria of Alfred Clebsch and P. M. Patterson.

As can be seen from the recent publication by Patterson (2) most of the taxonomic papers on Virginia bryophytes deal with the flora of the southwestern mountains. There are, as far as I can learn, no previously published records for the part of Virginia covered by this list, with the exception of Anderson's (1) mention of Fredericksburg as a station for *Tortula pagorum*. This list is arranged according to the check-list number of "The Bryologist" and contains a total of 148 species and varieties. Of this number the following nine, marked in the list with an asterisk, are recorded here for the first time for Virginia:

- Pogonatum brachyphyllum* (Rich.) Beauv.
- Brothera Leana* (Sull.) C. Muell.
- Grimmia laevigata* (Brid.) Brid.
- Ptychomitrium Drummondii* Sull.
- Orthotrichum obtusifolium* Brid.
- Orthotrichum pusillum* (Sull.) Austin

<sup>1</sup>Contributions from the Botanical Laboratory, The University of Tennessee, N. Ser. No. 112

*Plagiothecium micans* (S. W.) Paris, var. *fulvum* (Hook. & Wils.) Paris

*Helodium paludosum* (Sull.) Austin

*Frullania inflata* Gottsche

The city of Fredericksburg is located on the Rappahannock River at the "Fall Line", which separates the rolling hills of the Piedmont from the Coastal Plain. Covered in this report are the immediate surroundings of the city and scattered localities within a radius of ten miles. Of these the more outstanding ones are described below:

In Spotsylvania County:

1. Oak-pine woods and yellow birch bottoms one mile west of Fredericksburg along the small creek Hazel Run.

2. Mixed, deciduous riverside woods and small stream beds above the dam of the Rappahannock, about one to two miles northwest of town.

3. Beech-oak-maple hardwoods with an understory of *Rhododendron maximum* on steep, north-facing bluffs above the Rappahannock River, six miles southeast of town. (This unique stand of *Rhododendron maximum* in the Virginia Coastal Plain is reported here for the first time and will be treated in a subsequent paper.)

In Caroline County:

A large *Alnus rugosa* swamp and *Sphagnum* bog, ten miles south of the city on U. S. Highway No. 2. It contained six species of *Sphagnum* as well as a considerable array of rare, coastal plain phanerogams including *Juncus caesariensis* and the northernmost station for *Lachnocaulon anceps*. The rare filamentous desmid *Phymatodocis Nordstedtiana* Wolle var. *minor* Børgesen was found here, in great abundance, for the first time in Virginia.

## MUSCI

### POLYTRICHACEAE

*ATRICHUM ANGUSTATUM* (Brid.) Bry. Eur. Spotsylvania Co.: Shaded lawn, Mary Washington College, city. #2569. Stafford Co.: Moist woods, clay bank on stream, 6 mi. S.E. of city. #3890.

*ATRICHUM CRISPUM* (James) Sull. Caroline Co.: Open peat bog, 10 mi. S. of city. #2494. Stafford Co.: Woods behind city dump. #2739.

*ATRICHUM MACMILLANI* (Holz.) Frye. Spotsylvania Co.: Ground, sandy woods on Hazel Run, 1 mi. W. of city. Mixed with *ATRICHUM ANGUSTATUM*. #2549.

\**POGONATUM BRACHYPHYLLUM* (Rich.) Beauv. Caroline Co.: Dry,

sandy, eroding slope above swamp, 10 mi. S. of city. #3853. Dec. 29, 1946.

*POGONATUM PENSILVANICUM* (Hedw.) Paris. Caroline Co.: Same as above. #2499. King George Co.: Clay bank on Potomac River, Belvedere Beach #3707.

*POLYTRICHUM COMMUNE* Hedw. Caroline Co.: Wet ground, swamp, 10 mi. S. of city. #2501. Spotsylvania Co.: Moist low woods, 1 mi. W. of city. #2564.

*POLYTRICHUM OHIOENSE* Ren. & Card. Spotsylvania Co.: Decaying log, low woods at dam of Rappahannock. #3832. Stafford Co.: On floor of beech-oak woods, city dump. #2743.

#### FISSIDENTACEAE

*FISSIDENS CRISTATUS* Wils. Spotsylvania Co.: Bank of stream, 6 mi. N.W. of city. #3881.

*FISSIDENS MINUTULUS* Sull. Spotsylvania Co.: Moist cliff, woods at dam. #3822. Stafford Co.: Wet concrete dam of city dump pond. #2741.

*FISSIDENS TAXIFOLIUS* Hedw. Spotsylvania Co.: Wet earth and rocks in stream, Fall Hill. #3836. Stafford Co.: Decaying log, city dump. s.n.

*FISSIDENS VIRIDULUS* (Sw.) Wahl. Spotsylvania Co.: On dripping wet sandstone, beech-rhododendron bluffs, 6 mi. S. of city. #2787.

#### DITRICHACEAE

*CERATODON PURPUREUS* (Hedw.) Brid. Spotsylvania Co. Crevice in sidewalk, Hannover Street, City. #3725.

*DITRICHUM LINEARE* (Sw.) Lindb. Caroline Co.: Sandy, eroding slope, 10 mi. S. of City. #3854. Spotsylvania Co.: Woods, Mary Washington College, city. #2601.

*DITRICHUM PALLIDUM* (Hedw.) Hampe. Spotsylvania Co.: Lawn, same as above. #2576.

*DITRICHUM FUSILLUM* (Hedw.) E. G. Britton. Spotsylvania Co.: Clay bank, same as above. #2582.

*PLEURIDIUM SUBULATUM* (Hedw.) Lindb. Spotsylvania Co.: Woods, same as above. #2593.

#### DICRANACEAE

\**BROTHERA LEANA* (Sull.) C. Mull. Spotsylvania Co.: Decaying wooden shingles, barn of Fall Hill Estate, N.W. of city. #3802. Dec. 28, 1947. This rare moss was growing in sterile condition in abundance, together with *DICRANUM MONTANUM*.

- DICRANELLA HETEROMALLA* (Hedw.) Schimp. Spotsylvania Co.: Sandy soil, woods, 1 mi. N.W. of city. #2519.
- DICRANELLA VARIA* (Hedw.) Schimp. Spotsylvania Co.: Moist sandstone, bluffs, 6 mi. S.E. of city. #2489.
- DICRANUM CONDENSATUM* (Hedw.) Spotsylvania Co.: Sandy woods, on ground, 6 mi. N.W. of city. #3873.
- DICRANUM MONTANUM* Hedw. Spotsylvania Co.: Decaying shingles, roof of barn, Fall Hill. #3803.
- DICRANUM SCOPARIUM* Hedw. Spotsylvania Co.: Woods, 1 mi. W. of city. #2558.
- DICRANUM SPURIUM* Hedw. Spotsylvania Co.: Dry upland oak woods, 1½ mi. W. of city. #3799.

#### LEUCOBRYACEAE

- LEUCOBRYUM ALBIDUM* (Brid.) Lindb. Spotsylvania Co.: Dry upland pine-oak woods, 6 mi. W.N.W. of city, near Zoan Baptist Church. #3871.
- LEUCOBRYUM GLAUCUM* (Hedw.) Schimp. Spotsylvania Co.: Same as above. #3872. Large cushions of both species were found fruiting side by side on Jan. 3, 1948. Stafford Co.: Damp woods, city dump. #2730.

#### BUXBAUMIACEAE

- DIPHYSCIUM FOLIOSUM* (Hedw.) Mohr. Spotsylvania Co.: Moss mat on rock, low woods, ½ mi. W. of city. #3764.

#### POTTIACEAE

- ASTOMIUM MUHLENBERGIANUM* (Sw.) Grout. Spotsylvania Co.: Clay bank, Mary Washington College, city. #2571.
- BARBULA UNGICULATA* Hedw. Spotsylvania Co.: Crevice of walk, same as above. #2597.
- PHASCUM CUSPIDATUM* Hedw. Spotsylvania Co.: Earth bank, same as above. #2571.
- TORTULA MURALIS* Hedw. Spotsylvania Co.: Brick wall of National Cemetery, city. #3891.
- TORTULA PAGORUM* (Milde) De Not. Spotsylvania Co.: Bark of Apple tree, Brompton orchard, City. #3728.
- WEISIA VIRIDULA* Hedw. Caroline Co.: Sandy dirt road, 10 mi. S. of city. #3852. Spotsylvania Co.: On side of ditch, Fall Hill. #2620.

#### GRIMMIACEAE

- GRIMMIA APOCARPA* Hedw. [Probably var. *GRACILIS* (Schleich.) Web.



& Mohr.] Spotsylvania Co.: On dry granite boulder, stream bed in woods above dam, 1 mi. N.W. of city. #3846.

- \**GRIMMIA LAEVIGATA* (Brid.) Brid. Stafford Co.: Large cushions on open granite boulders in Rappahannock riverbed below Falmouth. #2745. June 11, 1945.

*GRIMMIA PILIFERA* Beauv. Spotsylvania Co.: Dry boulder, stream bed of Hazel Run, 1½ mi. W. of city #3796. Stafford Co.: On large boulder, Rappahannock riverbed below Falmouth. #2746.

*HEDWIGIA CILIATA* (Ehrh.) Hedw. Spotsylvania Co.: On rock, open upland woods, 1½ mi. W. of city. #3800. Stafford Co.: On large boulders in Rappahannock riverbed below Falmouth. #2744.

- \**PTYCHOMITRIUM DRUMMONDII* Sull. Spotsylvania Co.: Trunk of red maple, National Cemetery, city. #3893. March 19, 1948. Stafford Co.: Trunk of dead tree, low woods along Rappahannock River, 6 mi. S. E. of city. #3888. Jan. 3, 1948.

*PTYCHOMITRIUM INCURVUM* (Muhl.) Sull. Spotsylvania Co.: Stone wall, Fall Hill. #2615. Stafford Co.: Crevice of large rock, river bed of Rappahannock below Falmouth. #2747.

#### FUNARIACEAE

*FUNARIA HYGROMETRICA* Hedw. Spotsylvania Co.: Ash heap below National Cemetery, city. #3894.

*PHYSCOMITRIUM TURBINATUM* (Mx.) Brid. Spotsylvania Co.: Stone wall, Brompton Heights, city. #2754.

#### ORTHOTRICHACEAE

- \**ORTHOTRICHUM OBTUSIFOLIUM* Brid. Spotsylvania Co.: Concrete wall, Hannover Str. city. #3723. Dec. 28, 1947. This represents a range extension southward from Maryland.

*ORTHOTRICHUM OHIOENSE* Sull. & Lesq. Spotsylvania Co.: Bark of tree, Ruffin farm, 5 mi. S.E. of city. #3869.

*ORTHOTRICHUM PUMILUM* Dicks. Spotsylvania Co.: Trunk of red cedar, Marye Heights, city. #3730.

- \**ORTHOTRICHUM PUSILLUM* Mitt. Spotsylvania Co.: Gemmiferous specimen on bark of red cedar, Mary Washington College, city. #2591. Trunk of tree, Ruffin farm, 5 mi. S.E. of city, #3869A. Dec. 31, 1947. (Collected by Dr. Hugo Iltis.)

#### AULOCOMNIACEAE

*AULOCOMNIUM HETEROSTICHUM* (Hedw.) Bry. Eur. Spotsylvania Co.: Moist, rock woods above dam. #2618. Stafford Co.: On ground, woods behind city dump. #2731.

- AULOCOMNIUM PALUSTRE* (Web. & Mohr) Schwaegr. Caroline Co.: Peat bog 10 mi S. of city. #3855. Spotsylvania Co.: Rotten log, wet alder marsh, 1½ mi. W. of city. #3781.

#### BARTRAMIACEAE

- BARTRAMIA POMIFORMIS* Hedw. Spotsylvania Co.: On ground, mixed oak woods, ½ mi. W. of city. #3756.
- PHILONOTIS FONTANA* (Hedw.) Brid. Spotsylvania Co.: Among rocks in stream, 1½ mi. W. of city. #3801.

#### BRYACEAE

- BRYUM ARGENTUM* (L.) Hedw. Caroline Co.: Moist ground, Rutherglen PO. #2529. Spotsylvania Co.: Brick wall, National Cemetery, city. #2530.
- BRYUM CAESPITICIUM* (L.) Hedw. Spotsylvania Co.: Ash heap, Marye Street, city. #3894.
- POHLIA NUTANS* (Hedw.) Lindb. Stafford Co.: Ground, damp woods behind city dump. #2733.
- POHLIA WAHLENBERGII* (Web. & Mohr) Andrews. Stafford Co.: Moist soil on stream, below Falmouth. #2748.

#### MNIACEAE

- MNIUM AFFINE* Bland. Spotsylvania Co.: Rotten log, woods behind National Cemetery, city. #3751.
- MNIUM CUSPIDATUM* Hedw. Spotsylvania Co.: Ground, Mary Washington College, city. #2511.
- MNIUM PUNCTATUM* Hedw. Spotsylvania Co.: Moist woods, 1½ mi. W. of city. #2531. Stafford Co.: On rock, small stream, city dump. #2727.

#### HYPNACEAE

- AMBLYSTEGIUM JURATZKANUM* Schimp. Spotsylvania Co.: Edge of stream, low woods, 6 mi. W.N.W. of city. #3869.
- AMBLYSTEGIUM VARIUM* (Hedw.) Lindb. Spotsylvania Co.: On rock, wooded edge of Hazel Run, 1 mi. W. of city. #2540.
- BRACHYTHECIUM FLAGELLARE* (Hedw.) Jennings. Spotsylvania Co.: Vertical moist cliff, deep valley behind Fall Hill. #3845.
- BRACHYTHECIUM OXYCLADON* (Brid.) J. & S. Caroline Co.: Sandy dirt road, 10 mi. S. of city. #3851. Spotsylvania Co.: Lawn, Mary Washington College, city. #2594.
- BRACHYTHECIUM SALEBROSUM* (Web. & Mohr) Bry. Eur. Spotsylvania

Co.: Same as above. #2588.

*BROTHERELLA RECURVANS* (Mx.) Fleisch. Spotsylvania Co.: Decaying log, low woods at dam. #3833.

*BROTHERELLA TENUIROSTRIS* (Schimp.) Broth. Spotsylvania Co.: Same as above. #3832 A.

*BRYHNIA NOVAE-ANGLIAE* (Sull. & Lesq.) Grout. Spotsylvania Co.: On rocks, stream in woods, 6 mi. W.N.W. of city. #3884.

*CAMPYLUM CHRYSOPHYLLUM* (Brid.) Bryhn. Spotsylvania Co.: Ground, open pasture, Fall Hill #2632.

*CAMPYLUM HISPIDULUM* (Brid.) Mitt. Spotsylvania Co.: Open woods, Mary Washington College, city. #2590.

*CIRRIPHYLLUM BOSCHII* (Schwaegr.) Grout. Spotsylvania Co.: Vertical granite cliff at dam. #3830. (Very lax form.) Woods, 1 mi. W. of city. #3747. (Typical form.)

*CLIMACIUM AMERICANUM* Brid. Spotsylvania Co.: Decaying log, moist woods above dam. #3834.

*ENTODON SEDUCTRIX* (Hedw.) C. Mull. Spotsylvania Co.: On stone fence, Brompton, city. #3727.

*EURHYNCHIUM HIANIS* (Hedw.) Jaeger & Sauerb. Spotsylvania Co.: On ground, woods, Mary Washington College, city. #2590 A.

*EURHYNCHIUM RUSCIFORME* (Nock.) Milde. Spotsylvania Co.: Attached to rocks in swift stream, woods above dam. #3810.

*EURHYNCHIUM SERRULATUM* (Hedw.) Kindb. Spotsylvania Co.: Old stump, woods, Fall Hill. #2628. Stafford Co.: Earth bank in low woods, 6 mi. S.E. of city. #3889.

*HOMOMALLIUM ADNATUM* (Hedw.) Broth. Spotsylvania Co.: On stones, woods 1 mi. W. of city. #2563.

*HYGROAMBLYSTEGIUM FLUVIATILE* (Hedw.) Loeske. Spotsylvania Co.: Damp, vertical rock in deep valley behind Fall Hill. #2790.

*HYGROAMBLYSTEGIUM IRRIGUUM* (Wils.) Loeske. Spotsylvania Co.: On rock, spring in beech-rhododendron wood, bluffs 6 mi. S.E. of city. #2790. Stafford Co.: On rock, stream at city dump. #2742.

*HYPNUM CURVIFOLIUM* Hedw. Spotsylvania Co.: Large mat on rock, woods  $\frac{1}{2}$  mi. W. of city. #3784.

*HYPNUM PATIENTIAE* Lindb. Spotsylvania Co.: Bank of wet gully, woods  $\frac{1}{4}$  mi. W. of city. #3743.

*LEPTODICTYUM RIPARIUM* (Hedw.) Warnst. [forma *LONGIFOLIUM* (Schultz) Grout ?]. Spotsylvania Co.: Dead branch, moist woods,  $1\frac{1}{2}$  mi. W. of city. #3791.

*PLAGIOTHECIUM DENTICULATUM* (Hedw.) Bry. Eur. Spotsylvania Co.: On humus, woods  $1\frac{1}{2}$  mi. W. of city #3792. Earth bank, woods

above dam. #3820. (This seems to be forma *PROPAGULIFERUM* Ruthe.)

*PLAGIOTHECIUM ELEGANS* (Hook.) Sull. Spotsylvania Co.: Humus at base of beech, valley behind Fall Hill. #3843.

*PLAGIOTHECIUM MICANS* (Sw.) Paris. Spotsylvania Co.: Dead log, woods  $\frac{1}{4}$  mi. W. of city. #3760. Stafford Co.: Ground, damp woods behind city dump. #2733.

\**PLAGIOTHECIUM MICANS* (Sw.) Paris, var. *FULVUM* (Hook & Wils.) Paris. Caroline Co.: Open peat bog, 10 mi. S. of city. #2498. Dec. 29, 1946.

*PLAGIOTHECIUM MUELLERIANUM* Schimp. Spotsylvania Co.: Moist woods, base of tree, behind National Cemetery, city. #2559.

*PLAGIOTHECIUM ROESANUM* (Hampe) Bry. Eur. Spotsylvania Co.: Dry, decomposing granite boulder in low woods above dam. #3829.

*PLATYGIRIUM REPENS* (Brid.) Bry. Eur. Spotsylvania Co.: Tree trunk, woods behind National Cemetery, city. #2539.

*POROTRICHUM ALLEGHANIENSE* (C. Mull.) Grout. Spotsylvania Co.: In swift water of stream, narrow wooded valley behind Fall Hill. #3838.

*SEMATOPHYLLUM ADNATUM* (Mx.) E. G. Britton. Spotsylvania Co.: Trunk of yellow birch, low woods behind National Cemetery, city. #3758. Stafford Co.: Base of tree in woods behind city dump. #2732.

*SEMATOPHYLLUM CAROLINIANUM* (C. Mull.) E. G. Britton. Spotsylvania Co.: Dry face of boulder in Hazel Run.  $1\frac{1}{2}$  mi. W. of city. #3795.

#### LESKEACEAE

*ANOMODON ATTENUATUS* (Hedw.) Huben. Spotsylvania Co.: On ground, moist woods above dam. #2614.

*ANOMODON MINOR* (Beauv.) Lindb. Stafford Co.: Bark of tree, low woods along Rappahannock, 6 mi. S.E. of city. #3886.

*ANOMODON ROSTRATUS* (Hedw.) Schimp. Spotsylvania Co.: Bark of oak, woods 1 mi. W. of city. #2554.

*HAPLOHYMENIUM TRISTE* (Cesati) Kindb. Spotsylvania Co.: Base of deciduous tree, Mary Washington College, city. #2589.

\**HELODIUM PALUDOSUM* (Sull.) Austin. Caroline Co.: Peat bog 10 mi. S. of city. #2493 B. Dec. 29, 1946.

*LESKEA ARENICOLA* Best. Spotsylvania Co.: On rock, woods 1 mi. W. of city #2540.

*LESKEA GRACILESCENS* Hedw. Spotsylvania Co.: Bark of old birch, low

riverside woods above dam. #3814. Stafford Co.: Bark of dogwood, woods behind city dump. #2734.

*LESKEA OBSCURA* Hedw. Spotsylvania Co.: Old log, dry woods 6 mi. S.E. of city. #2791. Stafford Co.: Moist rock, small stream below Falmouth. #2750.

*THELIA ASPRELLA* (Schimp.) Sull. Spotsylvania Co.: Bark of deciduous tree, woods 1 mi. W. of city. #2525.

*THUIDIUM DELICATULUM* (Hedw.) Mitt. Spotsylvania Co.: Moist, rocky woods above dam. #2629.

*THUIDIUM MICROPHYLLUM* (Hedw.) Best. Spotsylvania Co.: Rotten log, moist beech-rhododendron wood, 6 mi. S.E. of city. #2786.

*THUIDIUM RECOGNITUM* (Hedw.) Lindb. Spotsylvania Co.: Open earth bank,  $\frac{1}{2}$  mi. W. of city. #2509.

#### LEUCODONTACEAE

*LEPTODON TRICHOMITRION* (Hedw.) Mohr. Spotsylvania Co.: Bark of tree, woods 1 mi. W. of city #2550.

#### FABRONIACEAE

*CLASMATODON PARVULUS* (Hampe) Sull. Spotsylvania Co.: On rotten bark, beech-rhododendron woods, 6 mi. S.E. of city. #3868.

#### FONTINALACEAE

*FONTINALIS NOVAE-ANGLIAE* Sull. Spotsylvania Co.: In swift water of the Hazel Run,  $1\frac{1}{2}$  mi. W. of city. #2798.

#### SPHAGNACEAE

*SPHAGNUM CAPILLACEUM* (Weiss) Schrank. Caroline Co.: Open peat bog, 10 mi. S. of city. #3865.

*SPHAGNUM IMBRICATUM* Hornsch. var. *AFFINE* (R. & C.) Warnst. Caroline Co.: Same as above. #3861. Spotsylvania Co.: Wet, open *Alnus rugosa* marsh,  $1\frac{1}{2}$  mi. W. of city. #3783.

*SPHAGNUM MAGELLANICUM* Brid. Caroline Co.: In low water, same as above. #3860.

*SPHAGNUM PALUSTRE* L. Caroline Co.: Same as above. #3863. Spotsylvania Co.: Spring in pine woods, 1 mi. W. of city. #3738.

*SPHAGNUM PLUMULOSUM* Roell. Caroline Co.: Same as above. #3700.

*SPHAGNUM SUBSECUNDUM* Nees. Caroline Co.: Same as above. #3858. Spotsylvania Co.: Wet bank of Hazel Run, 1 mi. W. of city. #2532.



## HEPATICAE LEPIDOZIACEAE

*BAZZANIA TRILOBATA* (L.) S. F. Gray. Spotsylvania Co.: Dripping-wet sandstone cliff, woods 1 mi. W. of city. #3771.

## CALYPOGEIACEAE

*CALYPOGEIA SULLIVANTII* Austin. Spotsylvania Co.: Same as above. #3772 A.

*CALYPOGEIA TRICHOMANIS* (L.) Corda. Spotsylvania Co.: Same as above. #3677. Stafford Co.: Earth, woods behind city dump. #2736.

## CEPHALOZIACEAE

*CEPHALOZIA BICUSPIDATA* (L.) Dumort. Spotsylvania Co.: Same as above. #3677.

*CEPHALOZIA CONNIVENS* (Dicks.) Lindb. Spotsylvania Co.: Earth bank, woods behind National Cemetery, city. #2522.

*CEPHALOZIA MEDIA* Lindb. Spotsylvania Co.: Dripping-wet sandstone cliff, woods, 1 mi. W. of city. #3677. Stafford Co.: Damp woods, behind city dump. #2729.

*ODONTOSCHISMA PROSTRATUM* (Sw.) Trevis. Spotsylvania Co.: Under-side of sandstone ledge, woods  $\frac{1}{2}$  mi. W. of city. #3769.

## CEPHALOZIELLACEAE

*CEPHALOZIELLA HAMPEANA* (Nees.) Schiffn. Caroline Co.: Among protonema of *POGONATUM BRACHYPHYLLUM*. (Rich.) Beauv. Sandy, eroding slope, 10 mi. S. of city. #3853 A.

## HARPANTHACEAE

*LOPHOCOLEA BIDENTATA* (L.) Dumort. Spotsylvania Co.: Base of tree, woods,  $\frac{1}{2}$  mi. W. of city. #2636.

*LOPHOCOLEA CUSPIDATA* (Nees) Limpr. Spotsylvania Co.: Earth bank, low woods above dam. #3826. Stafford Co.: Base of beech, woods behind city dump. #2737.

*LOPHOCOLEA HETEROPHYLLA* (Schr.) Dumort. Spotsylvania Co.: On rotten log, moist woods, Fall Hill. #3848. Stafford Co.: Base of beech, woods behind city dump. #2736.

*CHIOSCYPHUS POLYANTHUS* (L.) Corda. Spotsylvania Co.: Moist ground, woods  $\frac{1}{2}$  mi. W. of city. #3787.

## JUNGERMANNIACEAE

*ISOPACHES BICRENATUS* (Schmid.) Buch. Spotsylvania Co.: Open woods, Mary Washington College, city. #2602.

*NARDIA LESCURI* (Aust.) Underw. Spotsylvania Co.: Dripping-wet sandstone cliff, woods 1 mi. W. of city. #3770.

*PLECTOCOLEA CRENULIFORMIS* (Aust.) Mitt. Stafford Co.: Damp woods behind city dump. #2729.

*PLECTOCOLEA HYALINA* (Lyell) Mitt. Spotsylvania Co.: On decomposing granite, wooded slope above dam. #3825.

#### PLAGIOCHILACEAE

*PLAGIOCHILA LUDOVICIANA* Sulliv. Spotsylvania Co.: Moist rocks below waterfall, low woods above dam. #3808.

*PLAGIOCHILA SULLIVANTII* Gottsche. Spotsylvania Co.: In thick mats, same as above. #3806.

#### SCAPANIACEAE

*DIPLOPHYLLUM APICULATUM* (Evans) Steph. Spotsylvania Co.: Decomposing granite in low woods above dam. #3819.

*SCAPANIA NEMOROSA* (L.) Dumort. Spotsylvania Co.: Crevice of moist rock ledge, woods 1/2 m. W. of city. #3742. Stafford Co.: Claybank along stream, woods 6 mi. S.E. of city. #3891.

#### PORELLACEAE

*PORELLA PINNATA* L. Spotsylvania Co.: Wet rocks below waterfall, woods behind Fall Hill. #3839.

*PORELLA PLATYPHYLLOIDEA* (Schwein.) Lindb. Spotsylvania Co.: Moist side of rock, stream behind Fall Hill. #3842. Stafford Co.: Base of beech, woods behind city dump. #2737.

#### RADULACEAE

*RADULA OBCONICA* Sull. Spotsylvania Co.: Mats on the base of granite boulder, low woods above dam. #3816.

#### FRULLANIACEAE

*FRULLANIA ASAGRAYANA* Mont. Spotsylvania Co.: On granite boulders and tree trunks, woods, 1 mi. W. of city. #3768.

*FRULLANIA EBORACENSIS* Gottsche. Spotsylvania Co.: On bark of deciduous tree, above dam. #2627.

<sup>4</sup>*FRULLANIA INFLATA* Gottsche. Spotsylvania Co.: Bark of red cedar and on apple trees, Brompton orchard, city. #3729. Dec. 22, 1947. Stafford Co.: Tree trunk, low woods along Rappahannock River, 6 mi. S.E. of city. #3888. Jan. 3, 1948. This is one of the commoner epiphytic bryophytes in the region.

*FRULLANIA SQUARROSA* (R. Bl. & N.) Dumort. Spotsylvania Co.: Base of oak, dry upland woods above dam. #3835.

*JUBULA PENNSYLVANICA* (Steph.) Evans. Spotsylvania Co.: Moist, vertical rock ledge in wooded valley behind Fall Hill. #3841.

#### LEJEUNEACEAE

*LEUCOLEJEUNEA CLYPEATA* (Schwein.) Evans. Spotsylvania Co.: Moist rock in stream bed, low woods above dam. #3812.

*COLOLEJEUNEA BIDDLECOMIAE* (Aust.) Evans. Spotsylvania Co.: Dripping-wet sandstone ledge, woods 1 mi. W. of city. #3786.

#### PELLIACEAE

*PELLIA EPIPHYLLA* (L.) Corda. Spotsylvania Co.: Dripping-wet sandstone ledge in woods, 1 mi. W. of city. #3773. Stafford Co.: Wet rock in small stream at city dump. #2740.

#### PALLAVICINIACEAE

*PALLAVICINIA LYELLII* (Hook.) S. F. Gray. Spotsylvania Co.: Same as above. #3677.

#### METZGERIACEAE

*METZGERIA CONJUGATA* Lindb. Spotsylvania Co.: In large sheets on granite boulders, low woods above dam. #3815.

#### MARCHANTIACEAE

*MARCHANTIA POLYMORPHA* L. Spotsylvania Co.: On moist sandstone, beech-rhododendron woods, bluffs 6 mi. S.E. of city #2487.

*CONOCEPHALUM CONICUM* (L.) Dumort. Spotsylvania Co.: Wet rock in stream, woods behind Fall Hill. #3840.

*DUMORTIERA HIRSUTA* (Sw.) Nees. Spotsylvania Co.: On wet sandstone, beech-rhododendron woods, bluffs, 6 mi. S.E. of city. #2788.

#### REBOULIACEAE

*REBOULIA HEMISPHERICA* (L.) Raddi. Spotsylvania Co.: On stones inside well house, Fall Hill. #3849.

#### RICCIACEAE

*RICCIA FLUITANS* L. Spotsylvania Co.: Open mudflats along Hazel Run, 1 mi. W. of city. s.n. Collected with Dr. Hugo Iltis, Sept. 10, 1943.

#### ANTHOCEROTACEAE

*ANTHOCEROS LAEVIS* L. Spotsylvania Co.: Moist sandstone, wooded hills above river, 6 mi. S.E. of city. #2492.

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MISSOURI BOTANICAL GARDEN,  
WASHINGTON UNIVERSITY,  
ST. LOUIS, MO.

*Impatiens pallida* f. *speciosa* Jennings  
in the Bull Run Mountain Area

H. A. ALLARD

On September 19, 1948, while collecting plant material along Broad Run, I came across extensive colonies of the form of *Impatiens pallida* with pale cream-colored flowers. These colonies were located about two to two and one-half miles below Thorofare Gap and covered much of the sandy flood plain along this stream. This cream-colored form grew in great profusion and was practically the only representative of the species occurring here. It required a rather careful search to find any orange-flowered plants in this locality. The cream-colored form *speciosa*, however, was abundant as far down stream as we went. The plants were especially vigorous, growing shoulder high, and evidently bred true to the characteristic cream color, as indicated by the extensive pure colonies occurring here. Jennings named this form in 1920 (*Ohio Jour. Sci.* 20: 204). The Virginia material was collected under my field number 19352, and deposited in the U. S. National Herbarium. I had previously reported finding a small amount of material of this cream-colored form *speciosa* growing in Tucker Co., West Virginia (*Castanea* 11: 57-58, 1946.)

WASHINGTON, D. C.

## Ferns in Clark and Loudoun Counties

HORACE TRUESDELL

Clarke County seems to have been skipped altogether by fern collectors as, according to "Virginia Ferns" by A. B. Massey, no ferns have been reported from that county. Yet the eastern side of the county is rich in ferns which extend along the side of the Blue Ridge Mountains and follow every stream to the Shenandoah river. The varied soil and topography have provided diverse conditions suitable for many species. In Loudoun County, to be sure, the ferns have been reported from the area near Harper's Ferry and the Short Hills with occasional reports from other localities.

The writer, located in the Blue Ridge Mountains south of Snicker's Gap in Loudoun County close to the Clarke County line, has explored many of the fern haunts from the base of the mountains in Loudoun County to the Shenandoah river in Clarke County and from the corner of Jefferson County, West Virginia, to the corner of Fauquier County. These explorations were made to collect ferns for a fern rockery, where about thirty species or named varieties are now growing. It seems improbable that all of the species indigenous to this area have been discovered but it appears likely that all of the common ones have been found.

The rock in this area is mostly igneous except for a narrow broken line of sedimentary (sandstone) cliffs along the west side of the mountain in Clarke County. There are also igneous cliffs along the west side of the mountain. The soils are loam, clay loam, silt, sand and sandy loam.

A list of the ferns found in the two counties is given below:

Name	Clarke	Loudoun	Notes
ADIANTUM PEDATUM Maidenhair fern	x	x	Open woods. Common.
ASPLENIUM PLATYNEURON Ebony spleenwort	x	x	Fields and thickets. Common.
ASPLENIUM TRICHOMANES Maidenhair spleenwort	x	x	Rocks. Rare in Loudoun.
ATHYRIUM ASPLENIOIDES Lady fern	x	x	Along streams. Common in Clarke.
ATHYRIUM PYCNOCARPON Narrowleaf spleenwort		x	Along streams. Rare.
ATHYRIUM THELYPTEROIDES Silvery spleenwort	x	x	Along streams. Common in Loudoun.



CAMPTOSORUS RHIZOPHYLLUS	x		On igneous rocks.
Walking fern			Not common.
CYSTOPTERIS FRAGILIS			
Fragile Fern			
var. MACKAYI		x	Along mountain streams.
var. PROTRUSA	x		On moist bank near river. Locally abundant.
DENSTAEDTIA PUNCTILOBULA	x	x	Along roads and in open woods.
Hay-scented fern			
DRYOPTERIS GOLDIANA		x	Along streams. Not common.
Goldie fern			
DRYOPTERIS HEXAGONOPTERA	x	x	Open woods on mountain.
Winged beechfern			
DRYOPTERIS INTERMEDIA	x	x	Various locations. Not common.
Evergreen woodfern			
DRYOPTERIS MARGINALIS	x	x	Various locations. Common.
Leathery woodfern			
DRYOPTERIS NOVEBORACENSIS	x		Along streams. Common in Clarke.
New York fern			
ONOCLEA SENSIBILIS	x	x	Swampy places.
Sensitive fern			
POLYPODIUM VIRGINIANUM	x	x	Rocks. Not common in Clarke.
Polypody			
POLYSTICHUM ACROSTICHOIDES	x	x	Open woods and near streams. Common.
Christmas fern			
PTERIDIUM AQUILINUM	x		Sandy barrens.
Bracken			
WOODSIA OBTUSA	x	x	Fields by rocks. Common in Loudoun.
Common woodsia			
OSMUNDA CINNAMOMEA	x		Along streams. Common.
Cinnamon fern			
OSMUNDA CLAYTONIANA	x	x	Along streams.
Interrupted Fern			
OSMUNDA REGALIS	x		Along streams. Uncommon.
Royal fern			
BOTRYCHIUM VIRGINIANUM	x	x	Woods. Common.
Rattlesnake fern			
BOTRYCHIUM DISSECTUM	x		Abandoned fields on mountains. Rare.
Cutleaf grape fern			

BOTRYCHIUM DISSECTUM      x  
 var. OBLIQUUM  
 Oblique grape fern

Abandoned fields on  
 mountains. Rare.

Other ferns in the rockery have been collected from nearby counties but one which ought to occur somewhere in the sandstone cliffs of Clarke County is *Asplenium montanum*, the mountain spleenwort, which was found at Raven Rocks in Jefferson County, West Virginia, a half mile from both Clarke and Loudoun Counties. After examining sandstone cliffs as bare as Mother Hubbard's cupboard for over an hour, the writer finally found a single little clump of this dainty fern in a crevice and was unable to find any more.

In the open woods the occurrence of ferns which grow under such various conditions as the maidenhair and leathery shield fern, or of stray lady ferns, New York ferns or silvery spleenworts which grow more happily under different conditions, was almost unpredictable. But along the water courses, where ferns are more abundant, several associations of species were observed.

Along the banks of one stream down under the mountain in Clarke County grew nothing but Christmas ferns and the leathery shield ferns in the ratio of about four of the former to one of the latter. The shade there is rather heavy. The soil is shaly, about neutral, moist and well aerated. In winter the little hollow thru which the stream runs is indeed a beautiful sight. It seems to be ideal for the Christmas fern which raises its frond erect to over two feet and makes a heavy root system but something less than ideal for the leathery shield fern which is not above average. Plants of both species were planted in my rockery and, after a winter and summer's growth, the former was smaller than when planted and the latter larger.

On either side of this stream are two other streams along which ferns grow luxuriantly but where neither of the preceding species can be found. The woods are somewhat more open and the land less steep. The soil is sandy and silty, in part deposited by the streams, and is probably slightly acid. Along these streams grow the cinnamon fern, the New York fern, the lady fern, less commonly the interrupted fern and the silvery spleenwort, and occasionally, the royal fern and the evergreen shield fern. Several other streams with similar conditions have these same fern associations though sometimes one or two of the species may not be represented.

On the Loudoun side of the mountain there is a stream where

Goldie's fern grows. Since the fronds are often five and six feet long it appears to be growing most happily. The soil is a loam, fertile, stony and neutral. The narrow-leaved spleenwort also grows along the stream but is much rarer than Goldie's fern. The neighboring streams which are slightly less steep with lighter timber and possibly slight acidity do not have these ferns but have mostly the silvery spleenwort and less frequently the evergreen shield fern.

The versatile leathery woodfern is found associated with Christmas ferns, not only along stream banks but in other places, usually near the base of the mountain; with maidenhair ferns in the open woods; and with Goldie's fern and the silvery spleenwort along mountain streams, though in slightly drier spots. It also grows alone in great profusion in boulder-strewn slopes on the west side of the mountain.

Beech ferns do not seem to occur according to rule except that they grow on the top of the mountain (not on the slopes or in the valley) and they grow in open woods with no relation to rocks. The density of the clumps seems to vary directly with the amount of light. Plants were found in Loudoun of a yellowish green and two miles away in Clarke of a bluish green. The contrast was striking. After both have been growing side by side in my rockery for a season, the difference seems to have diminished but longer observation will be needed on this point. It is possible that environmental differences in sunlight and soil, especially the abundance of certain chemicals, may have accounted for the variation.

The occurrence of the hay-scented fern seems to be determined largely by light conditions. I have never seen it in fields, as reported from New England, nor does it seem so rampant as reported there, but I have seen it in open glades where there is some direct sunlight for a short time each day. For the same reason it may relish cuts and fills along roads. It grows in raw clay free from organic matter and in poor sand and thrives with no special regard for fertility but I have not seen it in either very wet or very dry places.

The two varieties of fragile ferns were found under quite different conditions. Those in Loudoun were found in rocks and in mountain streams with their roots practically in the cold running water. Those in Clarke were on a bank made by the cut for a road along the west side of a steep hill—a place that probably oozed water in the spring. As the former grew in clumps with black stipes and rachis to the second pair of pinnae and the latter grew singly with black only at the base of the stipes, a difference was recognized. I am

indebted to Dr. C. V. Morton for the identification of the two varieties.

The walking fern was found quite by accident when my son Alfred and I were out on a combined fern hunting and photographing expedition. We stopped along the mountain road a few miles from Ashby's Gap to make coffee and have our lunch. There concealed from the road was a cliff and a delightful place to have lunch. On the rocks we found the walking fern growing together with the polypody. The rock was of igneous origin—in fact there is no limestone on my side of the Shenandoah river. There were no walking ferns on the nearby cliffs but they were again found three miles north along the same cliff line, and they were also found on rocks in the hills near the river.

To collect ferns over an area roughly twelve miles by three miles with a wide range of conditions in soils, acidity, moisture, light, exposure, etc., and to plant them in a rockery four rods square and make them flourish presents many problems. If the ferns were to insist upon having the conditions under which they grow in nature, the problems would be nearly insurmountable. However, the adaptability of ferns is amazing and at least 95% of the 300 or so of ferns that I have planted are growing happily. In any case the growing of ferns is not to be part of this story.

BLUEMONT, VA.

### Records of *Picea* in Virginia

RICHARD L. HOFFMAN

Although widespread in the northern part of its range, *Picea rubens* Sarg. (*rubra* of Gray's Manual) becomes a species of rather scattered occurrence in the latitude of Virginia—appearing to be restricted to high mountain tops in the tier of counties bordering West Virginia. This altitudinal limitation is of considerable interest from a purely phytogeographic standpoint, and it also happens that the spruce biome is usually accompanied by a more or less characteristic flora and fauna.

In connection with studies on Virginian amphibians, I have noted the association of certain forms of salamanders with spruce stands, and have thus become interested in discovering as many of the latter as possible in Virginia. In addition to the more or less well-known spruce forests, I have been fortunate in locating several localities which seem to have escaped the notice of most botanists.

It is to make these places known that this information is presented. It should be mentioned that the U. S. Forest Service in at least the George Washington National Forest has been active in planting considerable areas with spruce seedlings, with the possible result that in time it may become difficult to determine which are native and which are planted trees.

All of the following localities are those at which red spruce occurs naturally. I would appreciate being informed of any such areas in Virginia which are not accounted for herewith.

1. *Highland County.* Alleghany Mountain, west of Hightown, and several adjacent ridges, support a considerable number of somewhat scattered trees along the tops and in intervening valleys. This area has long been known to botanists. It is at present transversed by U. S. Rt. 250 and by several county and Forest Service roads.

2. *Rockingham County.* Through the kindness of the staff of the headquarters of the George Washington National Forest, Harrisonburg, Virginia, I was informed that a large stand of native red spruce was to be found on Shenandoah Mountain in the western portion of Rockingham County. On July 4, 1948, the region was visited and the spruce located. This stand, of several acres extent, is at the head of a small unnamed stream (one of the headwaters of Dry River) between Rader and Shenandoah Mountains, and slightly difficult of accession. Prospective visitors should first avail themselves of a county map, which can be obtained free of charge from the Forest Supervisor at Harrisonburg or the District Ranger at Bridgewater. Two routes are suggested. The simplest involves driving to the top of Shenandoah Mountain on U. S. Route 33 (to the West Virginia state line markers) and walking northwest along the "road" for a distance of  $5\frac{1}{4}$  miles, more or less, to a small clearing marked by a hunting cabin and a small clump of *Juglans*. The clearing extends down the slope to the right, past a spring house, and at the bottom a trail proceeds toward the spruce. The trees may be readily seen during the winter. An alternate route involves driving west from Harrisonburg on County Route 763 toward Palos. About two miles south of that place a Forest Service road marked "Long Run Trail" connects on the left. This road is followed for about  $9\frac{1}{2}$  miles, keeping to the left at road forks, until the cabin and clearing mentioned above are encountered.

The trees are mostly large and scattered, but thick in some places. The undergrowth is almost exclusively composed of ericaceous



shrubs. The wood sorrel, *Oxalis montana*, which is usually associated with spruce, was not found. Unfortunately, no plant specimens were obtained, but a great many grasses and sedges were noted along the small streams draining the area. A careful study of the flora might well repay the slight trouble needed to reach the location.

3. *Giles County*. Salt Pond Mountain, north of the Biological Station at Mountain Lake, has a fairly large but scattered stand of spruce along the headwaters of Little Stony Creek. This locality is well-known and needs no further comment.

4. *Tazewell County*. Mr. Lloyd G. Carr informed me, in 1946, that some of the mountain tops in the Burkes Garden region supported stands of spruce, and in the summer of 1947 I investigated the report to the extent of climbing Beartown Mountain, on the southwest edge of the Burkes Garden "bowl." The top was found to have a large spruce forest, extending downward on the southern slope for an undetermined distance toward Freestone Valley. The trees noted here are very thick, in places excluding all undergrowth.

A recent topographic map of the Burkes Garden region is available, and should be consulted by prospective visitors. No road or trail leads to the top of Beartown Mountain, and the shortest (although difficult) route to the top is straight up the northeast side. The slopes on the inside are in pasture up to the 4000 foot level, but are extremely steep.

It is interesting to note that Beartown, with an elevation of 4705 feet, is the second highest point in the Alleghanies, exceeded only by Spruce Knob in West Virginia; and is also the third highest place in Virginia (after Mount Rogers and White Top). The salamander fauna found there is a curious mixture of Alleghanian and "southern Blue Ridge" forms.

5. *Smyth-Grayson-Washington Counties*. The region immediately surrounding White Top and Mount Rogers contains a large number of spruce trees as well as the southern balsam, *Abies fraseri*. In fact, the latter is by far the more abundant at higher elevations on Mount Rogers. The region has often been visited by botanists, so that no further comments are necessary.

It may be worthwhile to append reference to several of the places subjected to spruce plantings in recent years. These include, in the Alleghanies, Elliott's Knob in western Augusta County and several points along Shenandoah Mountain in Rockingham. In the Blue Ridge, a number of small trees were observed along the road to the tower on Rocky Knob, east of Lexington. Doubtless a number of

additional areas are being planted so that in time the natural distribution of spruce in Virginia may become obscured.

MILLER SCHOOL OF BIOLOGY  
UNIVERSITY OF VIRGINIA

## NOTES and NEWS

WILBUR H. DUNCAN, *Editor*

### Reviews of Publications Including Material of Probable Interest To Southern Appalachian Botanists

*A Taxonomic Study of Ranunculus. A Treatise on the North American Ranunculi*,—Lyman Benson, *American Midland Naturalist* 40: 1-261, 1948. This treatment places the number of species at ninety-six and the varieties at 107. Many of these entities are from outside the Southern Appalachian range. This makes the publication cumbersome in so far as its use in this area is concerned. After using it for a time and making a few marginal notes I have been able to proceed with identifications of material at a reasonable rate. The most helpful notes to me have been the addition (in the keys) of page numbers after each Subgenus and Section, and the marking of those groups and/or species that do not occur in region covered by the material which I am studying, namely the Southeastern United States. For example, the latter notations allow me to eliminate Subgenus VII, VIII, and IX from consideration and thus the first character in the key to the Subgenera. This same process of elimination may be followed throughout the publication with the net result of having keys that are relatively easy to use. A notable feature is the use of tables to present material for separation of many of the varieties. These together with excellent descriptions of the entities have been of great help in handling material of the genus.

The data on synonymy are welcomed. His presentation of different interpretations of categories, the conservative which he uses, the liberal, and the moderate is of much help in using his work in conjunction with that of others. Dr. Benson undoubtedly had a tremendous task in examining the 12,900 plant specimens in his study. Material was borrowed from many herbaria. After studying the list it would appear that comparatively little of the material available from the Southeastern States was studied. On the basis of my experience

with other groups and the statements of other taxonomists little material from this area is to be found in the herbaria listed. It might have been of assistance to the study for material to have been obtained from other herbaria in that area, e.g. from Duke University (119,890 specimens), University of North Carolina (110,000 specimens), and University of Tennessee (81,000 specimens), all of which emphasize material from adjacent territory. It seems that this would have given information that would have helped clarify problems that seem to be present in the *Ranunculi* of the Southeast.

For those in the Southern Appalachian area who will work with *Ranunculi*, this treatise will be very useful and is a "must" for the taxonomic library.

*Assistance in Naming Dryopteris Material.* Those persons working with material of this genus may obtain help in making determinations from *Dryopteris Hybrids*,—Albert Chandler, Amer. Midl. Nat. 40: 763-773, 1948. Information concerning 19 reported hybrids are summarized. Notes on each of these hybrids should be of interest to man.

*Location of Herbaria.* G. N. Jones and Edna Meadows of the University of Illinois have contributed to the field of taxonomy in their *Principal Institutional Herbaria of the United States*,—Amer. Midl. Nat. 40: 724-740, 1948. The information on location, size, and person in charge will greatly facilitate any search for the location of collected material. It is significant that the states of the Southern Appalachian Region are represented by small totals of specimens. Listed according to size, the smallest first, we have the state of Kentucky with none (the herbarium at the University being completely destroyed by fire on 12 November, 1948). Others, listed in order, are Mississippi, 2,000; Alabama, 6,000; Virginia, 6,250; S. Carolina, 6,260; Georgia, 27,000; West Virginia, 80,000; Tennessee, 83,000; Florida, 120,000; and N. Carolina with 245,000. These are hardly impressive numbers and farther emphasize the great need for expansion of taxonomic work in most states.

*Resin Sac Patterns in Needles of Conifers as a Diagnostic Character.* It is suggested that the resin sac pattern should be used with caution except in those instances in which sufficient anatomic studies have been made to establish definitely the reliability of the characters in the species concerned. This thought was provoked by the information presented in *The Resin Sac Pattern in the Needles of Engelmann Spruce and Blue Spruce from Southeastern Wyoming*,—J. F. Reed and G. F. Freytag, Amer. Midl. Nat. 41: 233-236.

*Identification of Cat-tails. Taxonomy and Distribution of N. American Cat-tails*,—Neil Hotchkiss and H. Dozier, Amer. Midl. 41: 237-254, 1949. Attempts of many taxonomists to name material has met with varied success. The results of my attempts seemed to be similar to that of many others,—often there was a feeling that an accurate delimitation of the populations was lacking. Since using the above treatment this situation has failed to appear. It seems to me that the major taxonomic problems in the genus *Typha* have been solved by this treatment. Try it!

*A Useful Reference for Studies of Scirpus. Annotated List of Original Descriptions in Scirpus*,—Alan A. Beetle, Amer. Midl. Nat. 41:453-493, 1949. One may evaluate the usefulness of this material by examining a statement by the author as follows:—"The present compilation was undertaken for the following reasons: (a) the list presents the genus in more usable form, more up to date, and more complete than it can be found elsewhere; (b) it makes more intelligible much early botanical literature—especially to students not specializing in the Cyperaceae; (c) it will contribute to the stability of the nomenclature in the natural genera of the Cyperaceae."

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